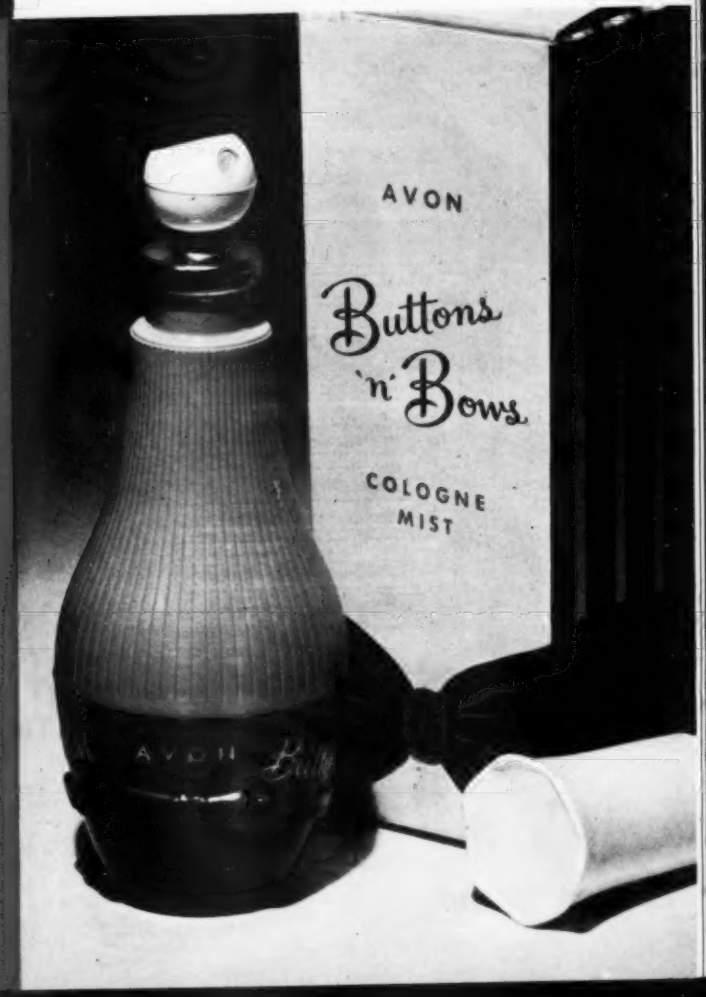
AEROSOL AGE

THE MAGAZINE OF PRESSURE PACKAGING

IN THIS ISSUE:

- Aerosol Topical Pharmaceuticals
- CSMA Meets in Florida
- Role of the Cosrom Filler
- DuPont Issues Paint Survey
- CMCS Holds Third Meeting
- Aerosols at Packaging Inst. Meeting
- Par Industries' New Filling Line
- Aerosol Room Deodorants—III



DECEMBER, 1960

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The economy of our high speed lines, (150,000 units per shift) plus tremendous warehouse space to hold the filled containers for drop shipments, has led many of the nation's leading brand names to move to Stalfort.

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THIS MONTH'S COVER

Avon Products, Inc., New York, last month introduced its 'Buttons 'n' Bows" spray mist in this new container made of "Delrin" acetal resin. Styled by Avon's designers and made by Bernardin Bottle Cap Co., Evansville, Ind., the container is equipped with a VCA "B 18F" metered valve and round ball actuator. This is said to be the first product of a major company to employ the "Delrin" container.

DECEMBER, 1960 VOL. 5, No. 12

AEROSOL AGE

The magazine of pressure packaging

Feature Articles

CONCERN OVER AEROSOL MARKET IS VOICED AT CMCS MEETING..... 36

DOES IT PAY TO FILL YOUR OWN AEROSOL PRODUCTS?..... 39
By Harry Peterson

AEROSOLS—PAST, PRESENT, AND FUTURE..... 41
By S. V. Tuttas

CLEANING FOREIGN MATTER FROM AEROSOL CANS..... 42
By Earl W. Luesby

AEROSOL FOOD PAPER HIGHLIGHTS PACKAGING FORUM..... 44

CSMA MEETS IN FLORIDA..... 49

THE TECHNICAL ASPECTS OF AEROSOL AIR FRESHENERS (Part III)..... 52
By Montfort A. Johnsen

TOPICAL PHARMACEUTICALS IN AEROSOL FORM..... 63
By John J. Sciarra, Francis J. Tinney, and William J. Freeley

PAR INSTALLS NEW FILLING LINE..... 70
By Edward Meier

RUTGERS UNIVERSITY OPENS NEW AEROSOL LABORATORY..... 75

THE FILLER SPEAKS: JACK ELLIS BLASTS PRICE CUTTING..... 81

ARGENTINE INDUSTRY SLOWED BY HIGH PROPELLANT COSTS..... 82

DUPONT PAINT SURVEY SHOWS NEED FOR CONSUMER EDUCATION... 86

1960 SUBJECT AND AUTHOR INDEX..... 93

Departments

IN THE SPOTLIGHT THIS MONTH..... 14

INDUSTRY MEETING CALENDAR..... 14

AEROSOLS IN REVIEW..... 88

NEWS OF PRESSURE PACKAGING..... 97

EQUIPMENT, PROCESSES & BULLETINS..... 109

CUSTOM FILLERS AND PACKERS..... 125

NEW PATENTS 131

CLASSIFIED ADVERTISEMENTS 133

INDEX TO ADVERTISERS..... 135

OVER THE TRANSOM..... 130

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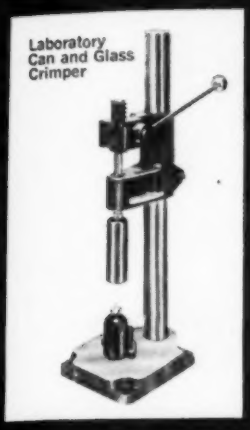

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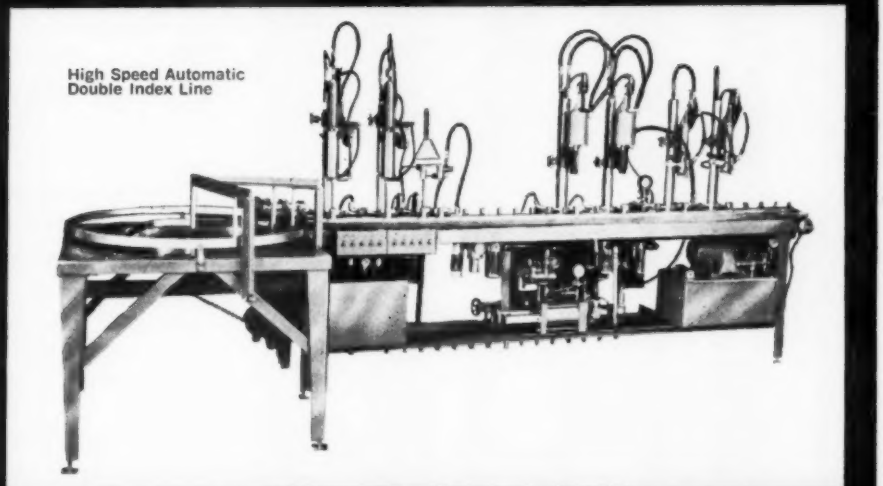

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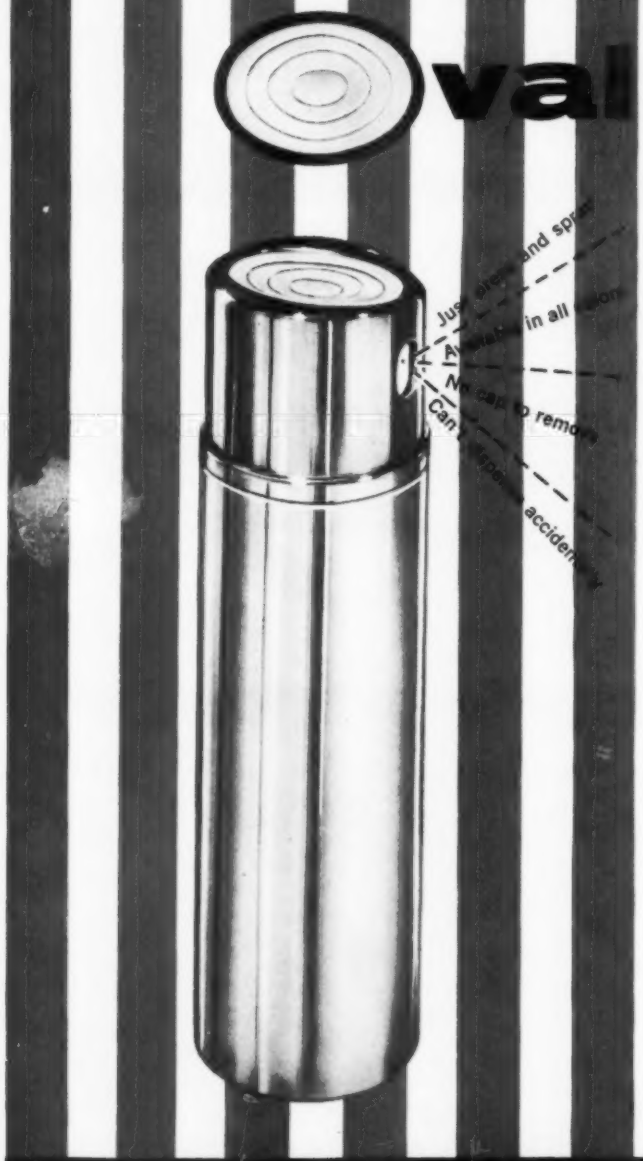

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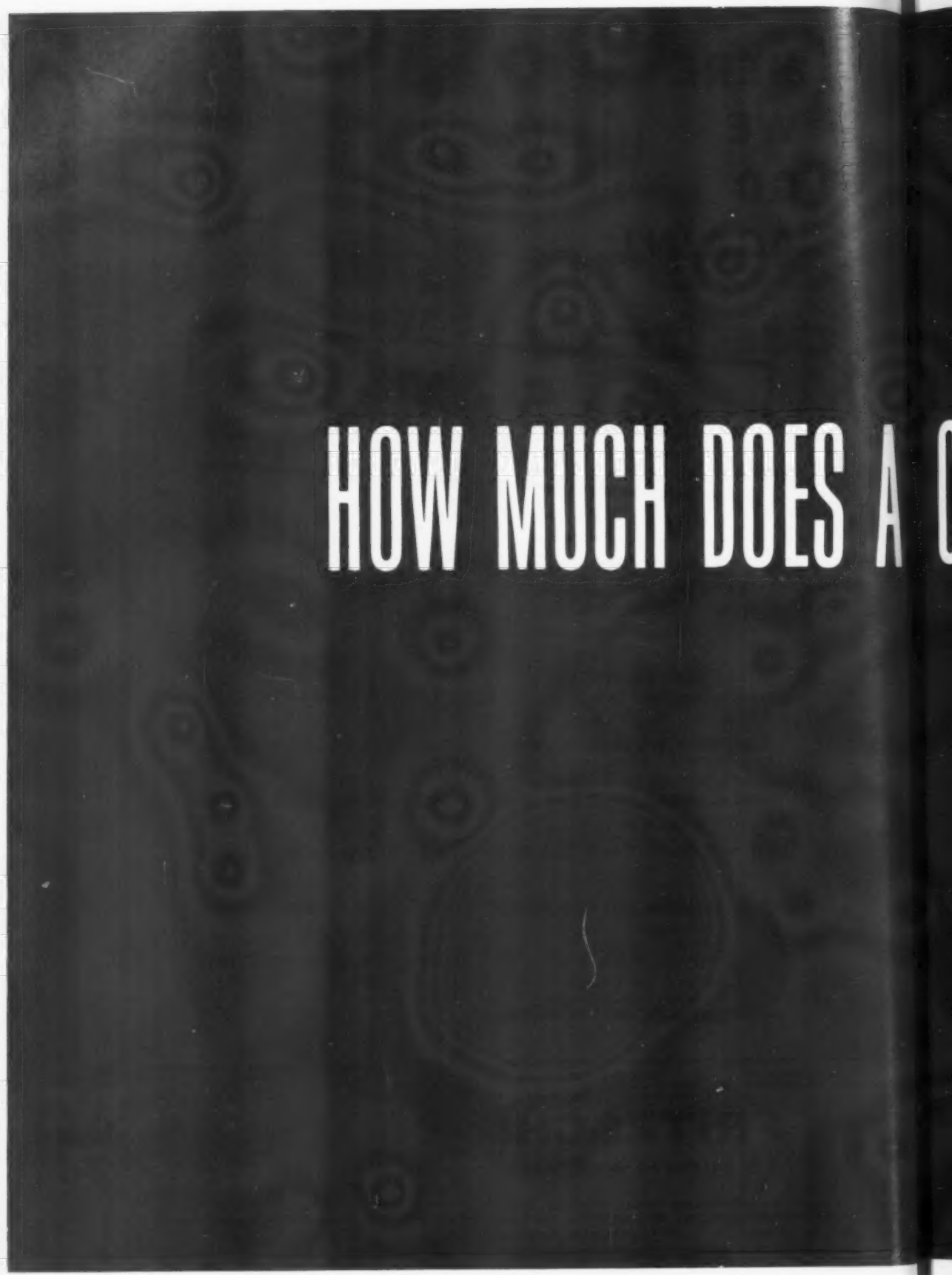
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A LITTLE CARE IN THE CHOICE OF YOUR SUPPLIER WILL GO FAR IN CUTTING COMPLAINTS AND REJECTS.

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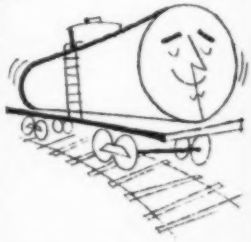
Du Pont regularly conducts surveys, clinics and seminars to bring you up-to-the-minute market information on aerosols. No other manufacturer of propellents offers such comprehensive studies. These facts and figures can help you pinpoint new markets for increased sales and profits.



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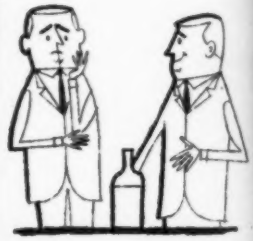
There are three Du Pont plants manufacturing "Freon" in the U.S., one in Canada and a network of warehouses to assure you of virtually local delivery . . . fast and efficient. "Freon" propellents are recognized throughout the aerosol industry for their unvarying high quality and top performance.



PRODUCT DEVELOPMENT SERVICE

Working on a new aerosol product? Du Pont may be able to help you with information on new or improved aerosol techniques worked out by its product development research team. These men can save you time and expense in experimental work by assisting you with their knowledge of formulations and packaging.

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BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY*

In addition, Du Pont national advertising on "Freon" helps establish a quality product in the minds of your customers . . . contributes to a better sales "climate" for you. E. I. du Pont de Nemours & Co. (Inc), "Freon"* Products Division 3212 Wilmington 98, Delaware.

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INDUSTRY MEETING CALENDAR

Chemical Specialties Manufacturers Assn. 47th annual meeting, Hollywood Beach Hotel, Hollywood, Fla. .....Dec. 3-9

American Management Association. Seminar on Packaging for Minimum Loss and Liability, Hotel Astor, New York.....Dec. 5-7

American Management Association. Seminar on Selection, Training, and Development of Packaging Personnel, Hotel Astor, New York..... .....Dec. 7-9

American Management Assn., Product & Package Design & Development Forum, Hotel Astor, New York .....Dec. 19-21

Association of American Soap & Glycerine Producers, Annual Meeting, Waldorf-Astoria Hotel, New York. .....Jan. 25-27

American Chemical Society, National Meeting, St. Louis, Mo..... .....March 21-30

Chemical Specialties Manufacturers Association, Meeting of Board of Governors, Division Executive Boards and Committees, Hotel Peabody, Memphis, Tenn. March 8-9, 1961

National Packaging Exposition and National Packaging Conference of American Management Association, Exposition Center, Chicago..... .....April 10-13, 1961

•

Yardley Appoints Reidy

John J. Reidy, an officer of Schick, Inc., since 1948, was recently appointed to the newly-created position of vice-president in charge of marketing by Yardley of London, Inc., New York. He will be responsible for coordinating the functions of the company's sales, merchandising, and advertising departments.

•

Dragoco Director Visits U. S.

Prince Wilhelm Karl, director of Dragoco, Inc., and a grandson of the last German Emperor, Wilhelm II, arrived in New York late last month for a visit to the company's plants in the United States. He has been on the top management team of Dragoco International since 1955 and is currently assistant managing director.

• **Concern Over Aerosol Market Voiced at CMCS Meeting** . . . On page 36 appears a complete report on the third annual meeting of the Canadian Manufacturers of Chemical Specialties Association, with aerosols once more occupying the prime interest of most of the meetings. Also in this issue are two of the three aerosol papers from the meeting. On page 39, Harry Peterson reiterates his views on the **custom filling vs. fill your own** controversy. On page 41, S. V. Tuttas tells of the history and future of the aerosol industry.

• **The Technical Aspects of Aerosol Air Fresheners (Part III)** . . . In this final installment of his notable series, Montfort Johnsen discusses the quaternary salts, the glycols, and some general aspects of the subject. His December contribution begins on page 52.

• **Topical Pharmaceuticals in Aerosol Form** . . . Some new data on this currently important subject is offered by three St. John's University researchers on page 135.

• **Aerosol Paper Is Highlight of Packaging Forum** . . . What are other industry trade groups learning about aerosols? On page 44, there appears a summation of two significant papers presented before the annual Packaging Forum. Food aerosols are given chief attention.

• **Aerosols Feature of International Druggists Show** . . . A complete page of photographs, plus a detailed description of the exhibits, highlights **Aerosol Age's** exclusive coverage of this important show (on page 46).

In Aerosol Valves . . .

WHAT'S THE MOST VITAL ELEMENT OF SUCCESS?

Spray head, delivery tube, valve body or housing, gasket, ferrule, spring . . . all play a role in the success of an aerosol valve. How they are individually made, and how they are put together as a unit determine their effectiveness. This is where the most vital element of all is brought into play.

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Ronald McIntyre, chief engineer for Cooper, McDougald & Robertson, Ltd., Berkhamsted, Herts., England, adjusts the 12-foot instrument panel on the new type pyrethrum extraction unit which his company installed in the Newark, N. J. plant of Prentiss. The unit, which employs a tripe distillation process, is the first of its kind to be installed in the United States.

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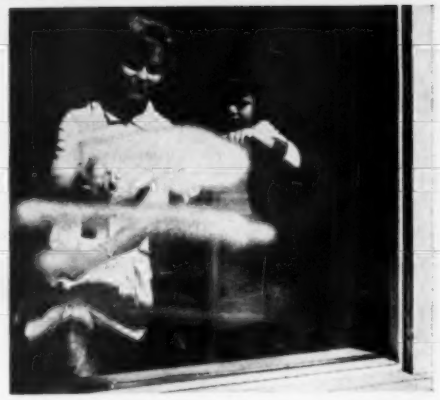
SILICONE NEWS from Dow Corning

Spray Way To Sales



For a prettier profit picture ... Dow Corning Silicones

To be sure your aerosol products sell and resell, formulate with Dow Corning Silicones. Because silicones — whether for cosmetic, polish, or industrial uses — provide the performance that pleases and brings customers back to buy again and again.

Take cosmetics. Silicones in the formulation mean creams and lotions that spread easily, work-in smoothly, "stay put". The skin never feels greasy; remains free to "breathe"; is effectively protected against waterborne irritants. Hair sprays impart lasting luster, greater manageability.

Or polishes for cars, furniture or glass. Silicone-based polishes mean almost no rubbing. A deeper, richer gloss is more easily attained and maintained. Greater resistance to oxidation is "built in" — Dow Corning Silicones give a polish job greater durability.

Industry, too, uses silicone aerosol products. Silicone release agents, for example, make plastic parts pop out of molds quickly, easily. Rejects, downtime and maintenance costs are slashed because silicones are heat-stable — won't melt or run off, won't form heavy carbonaceous build-up on the mold. Detail is perfect, close tolerances are held time after time.

Whatever you formulate or package for private label, remember silicones make good products better ... improve profits by selling and reselling. And remember, too, that Dow Corning chemists are constantly working to develop new silicones and new aerosol formulations. Write today for the latest and most complete technical information—about silicones in cosmetics, polishes, specialties or in industrial products.

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MIDLAND, MICHIGAN

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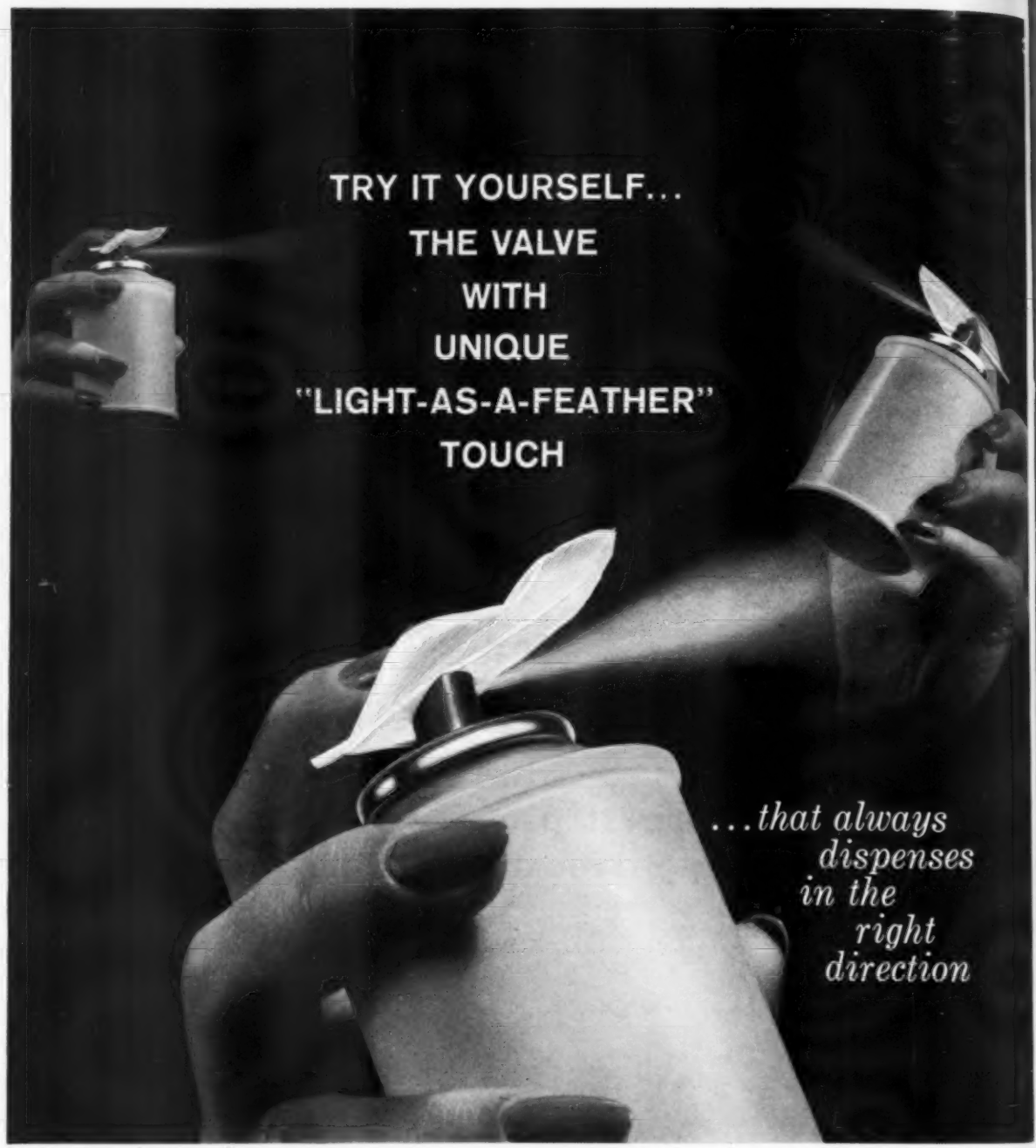

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You put that ethyl alcohol drum there because U.S.I.'s reputation for quality safeguards your own.

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IF YOU ARE CONSIDERING AEROSOL PACKAGING FOR INCREASED PHARMACEUTICAL SALES...

PFIZER HYDROCORTISONE, NEOMYCIN, POLYMYXIN AND VITAMINS WILL INTEREST YOU!

Firmly convinced that aerosol dispensers can open new doors to pharmaceutical sales, Pfizer continues to cooperate closely with the pressure packaging industry.

The purpose: To develop formulations that will permit pharmaceutical manufacturers to use most profitably the advantages inherent in pressure-packed containers.

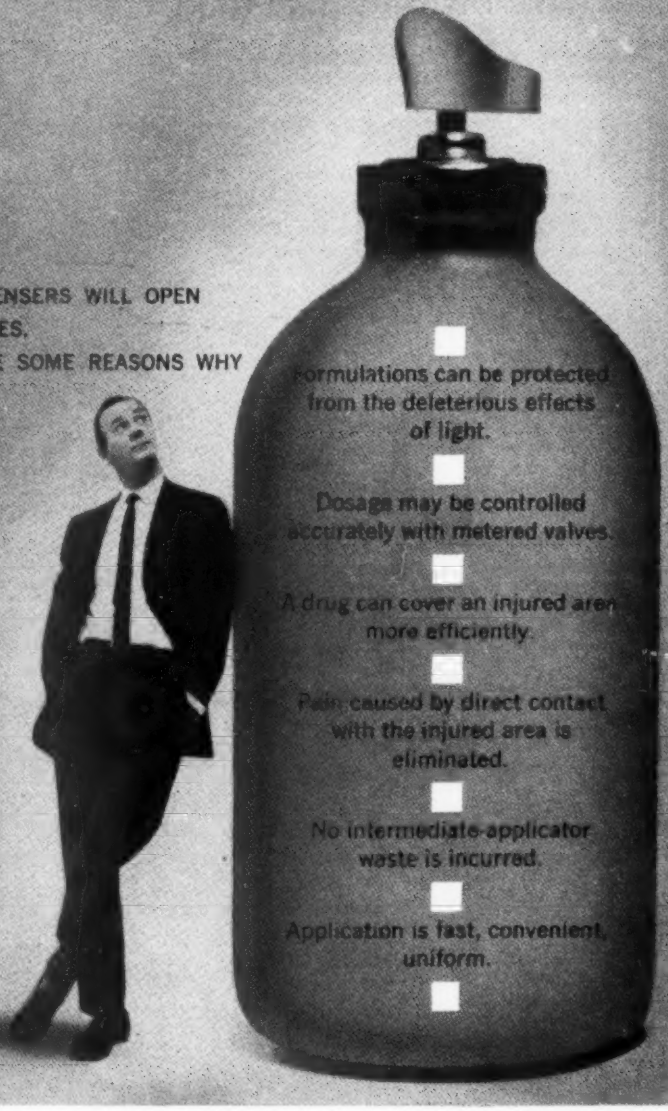
Typical findings: Preparations utilizing Pfizer Hydrocortisone, Neomycin, Polymyxin and vitamins are enhanced by the natural ability of pressure containers to maintain formulations completely free from atmospheric contamination.

The stability of liquid vitamins is substantially increased because the preparations are overlayed by inert gas for the life of the container.

Write to Pfizer for reprints of the interesting report "Pressure-Packed Pharmaceuticals." Technical Bulletins on Pfizer Polymyxin, Neomycin and Hydrocortisone are also available on request.

PFIZER BELIEVES THAT AEROSOL DISPENSERS WILL OPEN NEW DOORS TO PHARMACEUTICAL SALES.

HERE ARE SOME REASONS WHY



- Formulations can be protected from the deleterious effects of light.
- Dosage may be controlled accurately with metered valves.
- A drug can cover an injured area more efficiently.
- Pain caused by direct contact with the injured area is eliminated.
- No intermediate-applicator waste is incurred.
- Application is fast, convenient, uniform.

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Choose the BEST Metered Valve... manufactured by EMSON

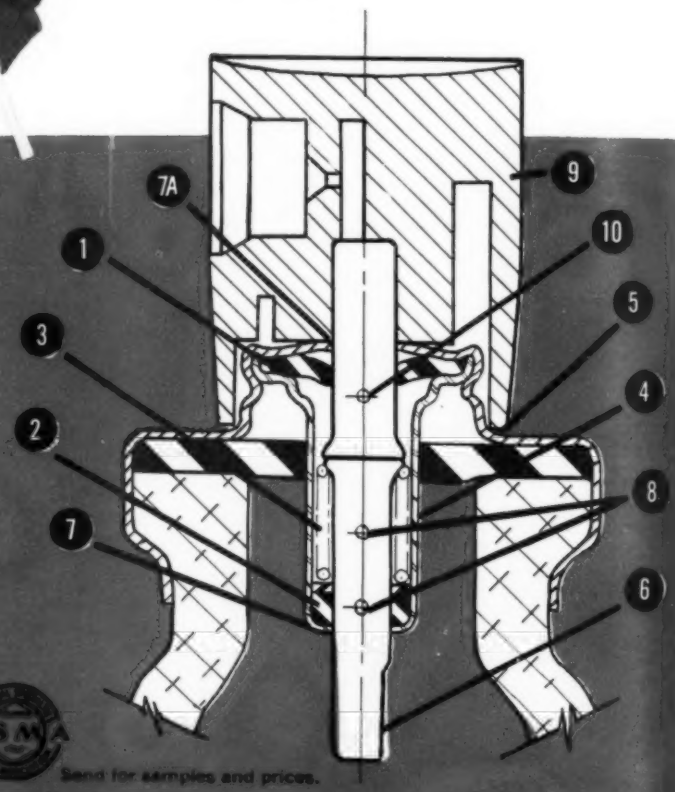
for

COLD or PRESSURE FILLED PRODUCTS —

pharmaceuticals, cosmetics, households, garden, chemicals, etc.

Some of the various dosage valves produced by Emson

Valves for 1" open containers now available with new mechanical break-up button.



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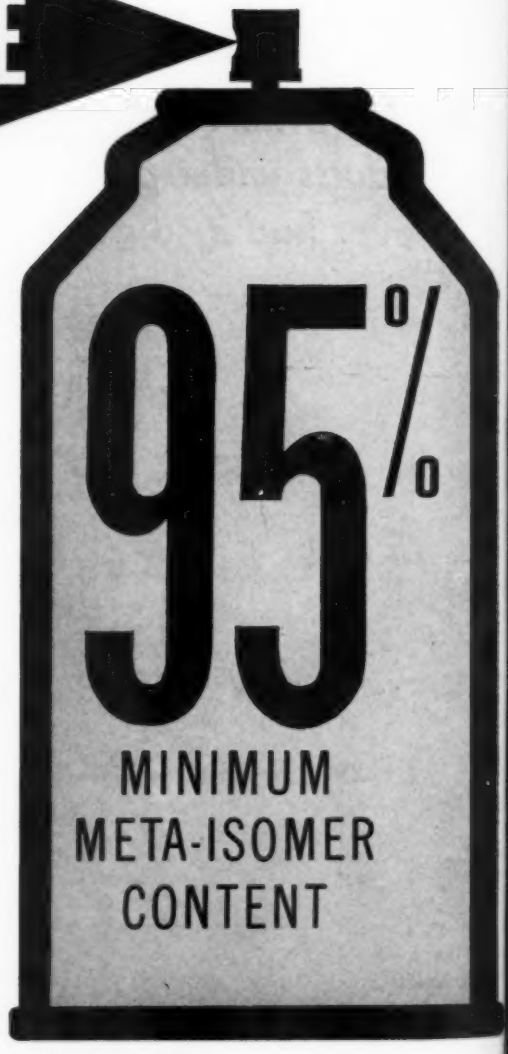

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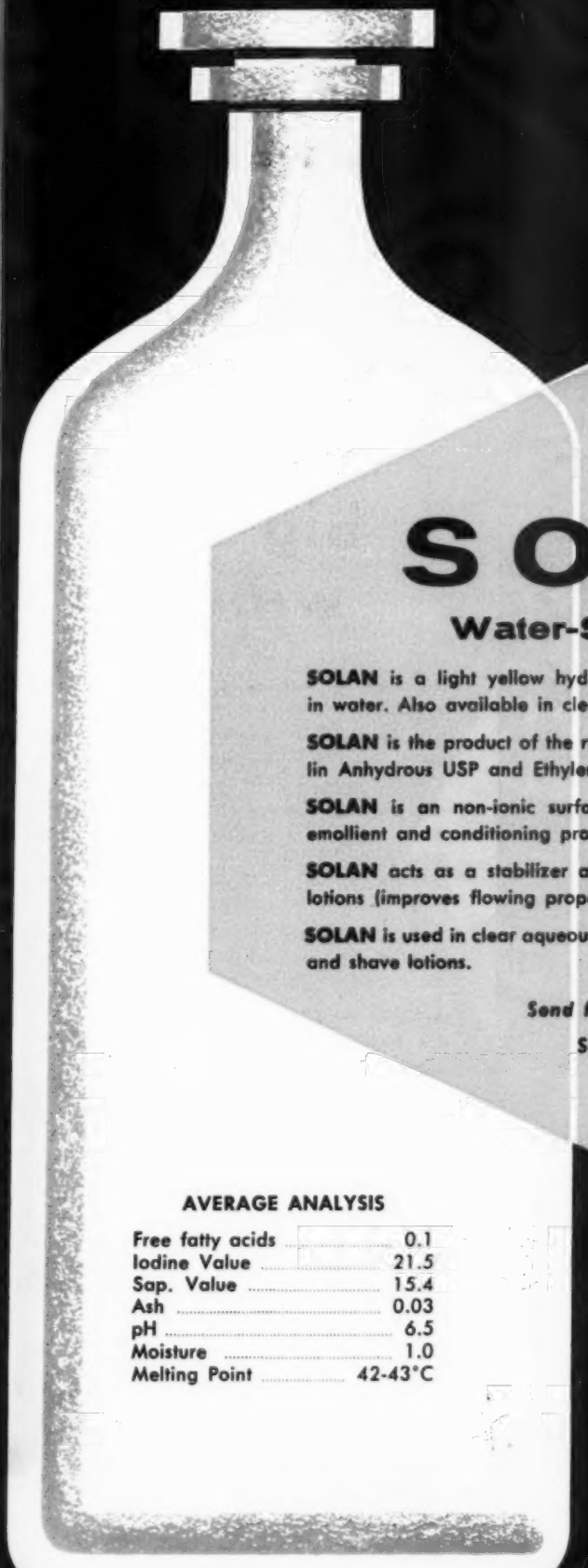

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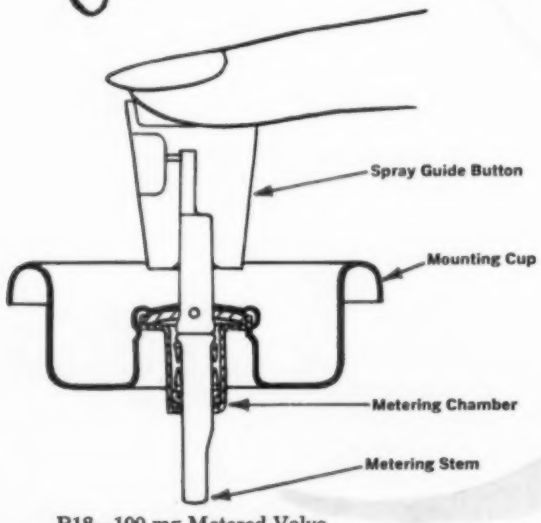

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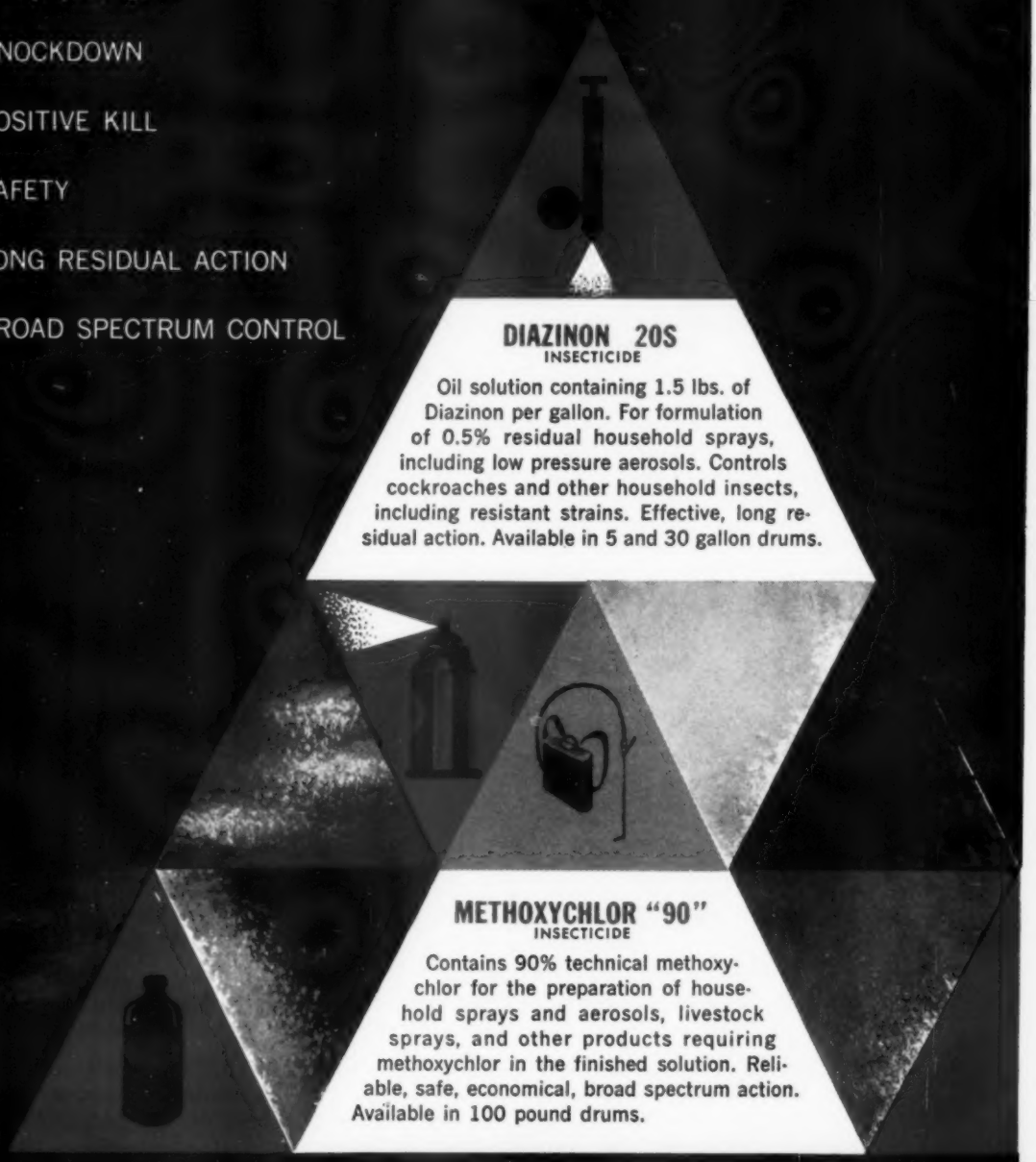

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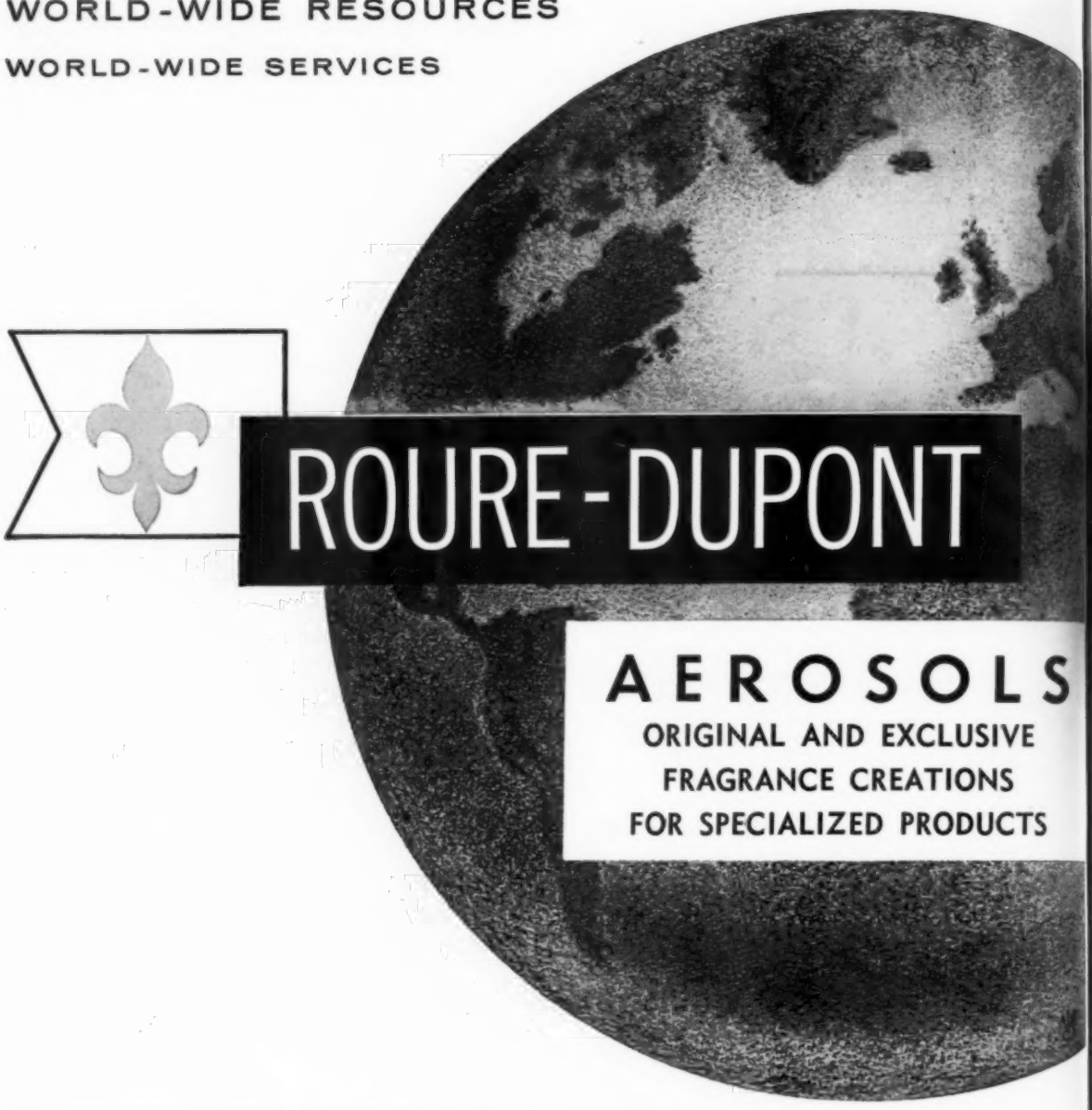

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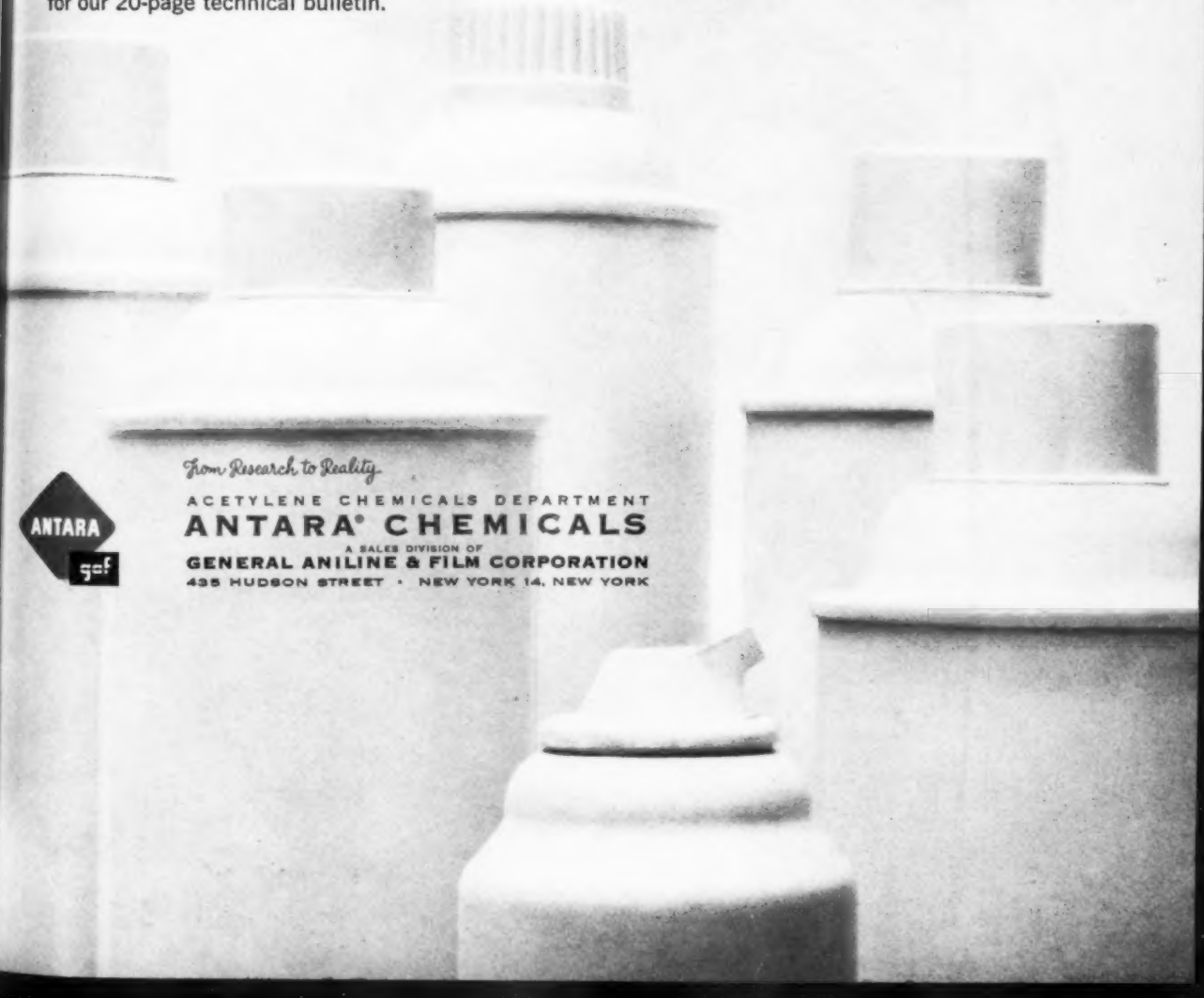

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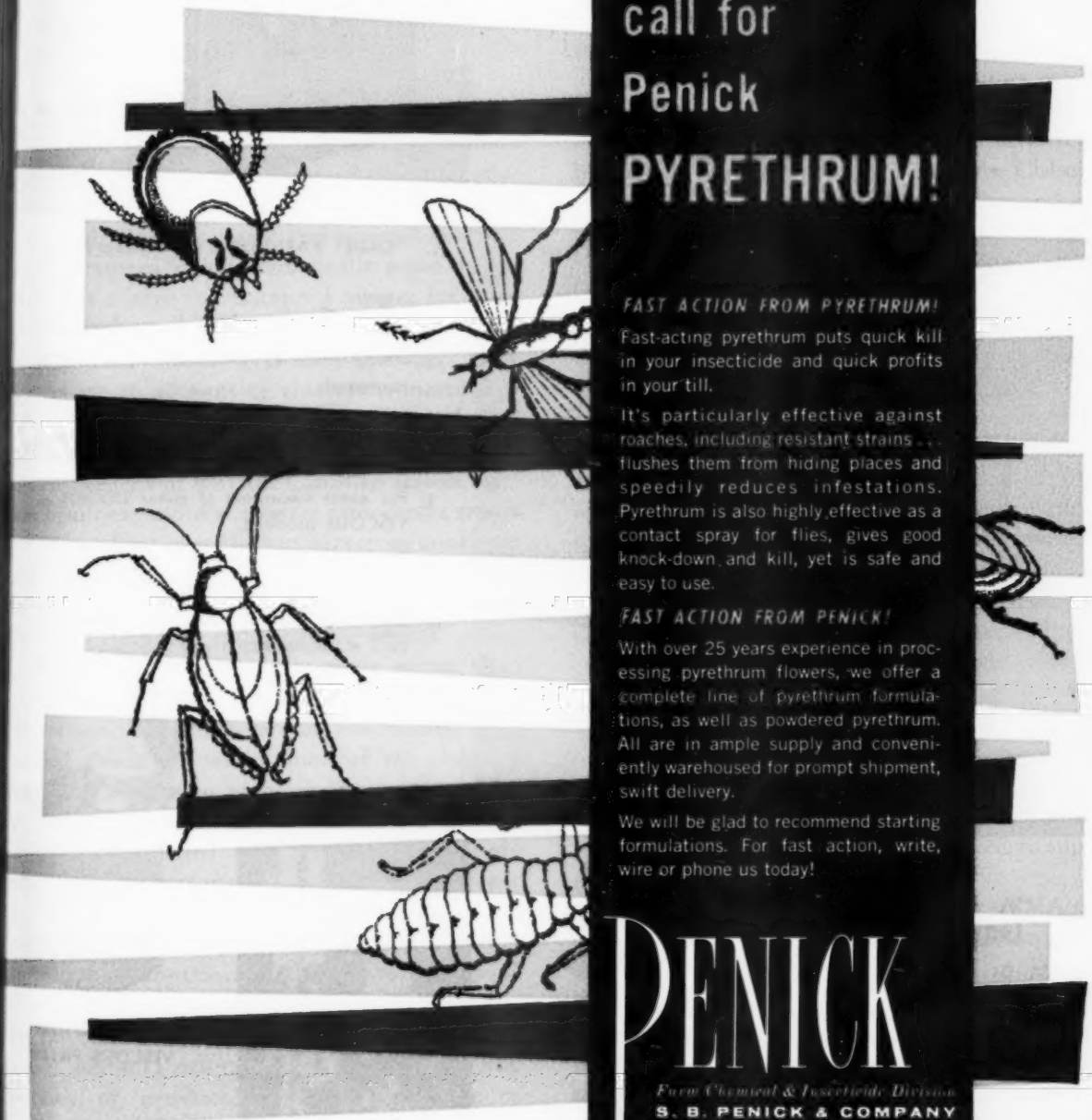

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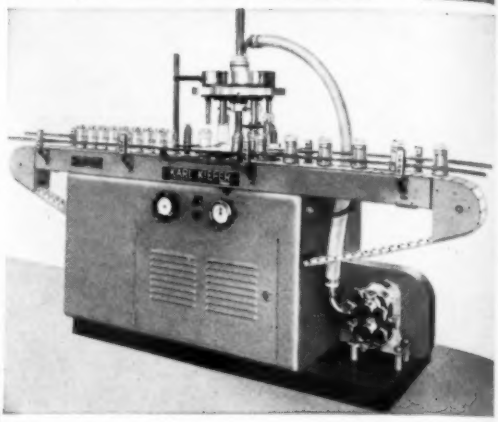

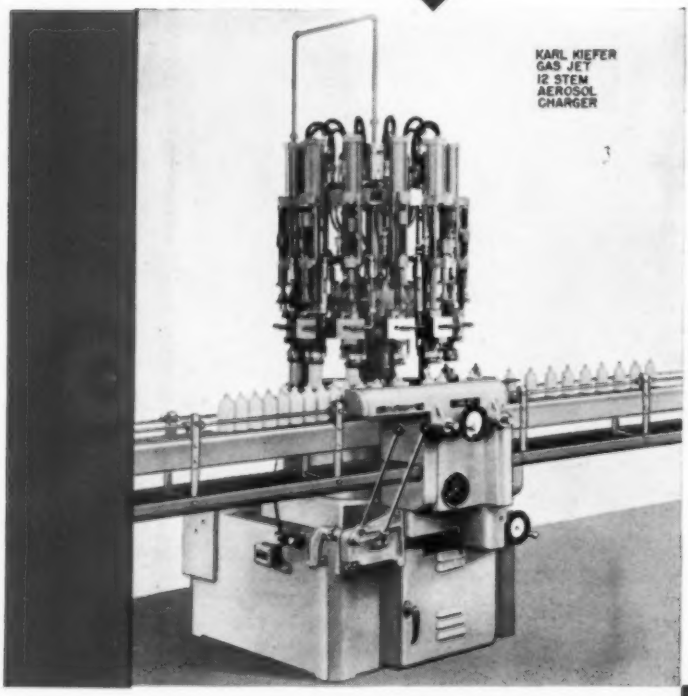

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I. **12-STEM GAS-JET AEROSOL CHARGER**

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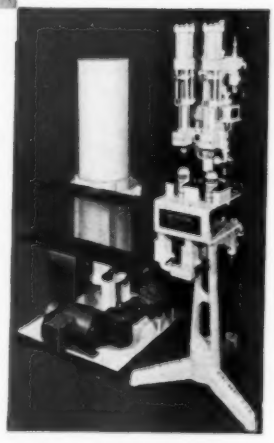

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EDITORIALS

The Uninformed Consumer . . .

EVERY few months some new consumer study or marketing development sharply reminds the aerosol industry that its job of consumer education is far from completed. For instance, this issue of *Aerosol Age* carries two separate (and unrelated) stories which dramatically point up the fact that a large and untapped market for aerosols exists among people who have had *no* acquaintance with the pressurized package. These stories are an account of the recent meeting of the Canadian Manufacturers of Chemical Specialties Association (page 36)—in which concern is expressed about why the Canadian aerosol market hasn't expanded at a better rate—and a report on an excellent new DuPont survey on consumer knowledge and use of aerosol paints (page 86)—in which it is concluded that far more selling effort and consumer education are needed.

These are just two of the more recent signs revealing a deep-seated industry anxiety. There are others. The marketers of insecticides, concerned about the wastefulness of the ordinary user, are considering adoption of metering valves to curb the consumer's misuse of (and subsequent dissatisfaction with) their product. Every study of the aerosol food market, every technical paper on the subject given at non-aerosol forums and conventions, draws attention to the fact that misuse of the container (and premature release of the compressed-gas propellant) is the prime reason for consumer dissatisfaction with pressurized foods. Aerosol toothpastes have had hard sledding because of emphatic consumer resistance to throwing away a container which apparently retains a good deal of product. Consumer surveys repeatedly come up with answers expressing dissatisfaction with aerosol products because the purchaser "can't determine *what* he is getting." These scattered, but worrisome, factors warrant serious analysis — not just by responsible marketers (with one or several areas of interest), but by the aerosol industry through the Chemical Specialties Manufacturers Association and its other areas of operation.

The major point to be made here is that the marketers, with one or two exceptions, are either unable or unwilling to solve this problem on their own. The competitive situation among the marketers of the major product types, combined with what appears to be a dangerous underestimation of the problem on the part of both big marketers and the many smaller ones, have legislated against any joint marketer effort toward consumer education. The yeoman efforts of the CSMA Aerosol Division's Publicity Program (which has done a notable job with a too limited budget) haven't received more than token support of those marketers who are member companies of the CSMA. And with the exception of this effort by the CSMA's Aerosol Division, no substantial effort has been made elsewhere in the field of consumer education. This point alone should be enough to accent the void currently filled by the CSMA Aerosol Publicity Program, and the need to support the program.

A plan is currently afoot within the CSMA to change the Aerosol Publicity Program from a voluntary subscription plan to one in which member companies would be required to contribute prescribed amounts. Another plan calls for formation of an Aerosol Suppliers' Committee to assist in fund raising for publicity and other joint industry efforts. Both these plans have merit and deserve serious consideration by CSMA members and the board of directors. Something must be done to sustain aerosol publicity, and quickly.★

The three aerosol speakers at the CMCS meeting were Harry Peterson (Peterson Filling), S.V. Tuttas (Crown Cork & Seal), and Dr. P. A. Sanders (DuPont).

Concern About Aerosol Market Is Voiced at CMCS Meeting

GROWING concern about the continued failure on the part of the Canadian aerosol market to progress upward at anywhere near the U. S. rate was a constant subject as the Canadian Manufacturers of Chemical Specialties Manufacturers Association held its third annual meeting in Montreal's Queen Elizabeth Hotel, Oct. 24-26. Aside from the obvious concern on the part of Canadian fillers, marketers, and suppliers in attendance at the convention, the discussion period of the major marketing forum at the convention was devoted almost entirely to probing the reasons for the lethargic rise of the Canadian aerosol market over the past few years.

The formal Aerosol Division program consisted of three papers, two by U. S. component suppliers and the third by the president of a major U. S. custom filler. Dr. Paul A. Sanders, of the "Freon" products Division of E. I. du Pont de Nemours & Co., Wilmington, reported a whole series of new formulations for non-aqueous foam aerosols (see *Aerosol Age*, Nov., page 33). S. V. Tuttas, vice-president in charge of sales for Crown Cork & Seal Co., Philadelphia, described at length the development and future of aerosols(page 45, this issue). Harry Peterson, president and founder of Peterson Filling & Packaging Co., Danville, Ill., delivered a resounding attack on what he termed the "economically unsound" practices by some companies of installing their own filling equipment (page 42, this issue).

Aside from the discussion generated by the formal aerosol papers, and the corridor arguments about the too-steady aerosol market in Canada, the main formal discussion of the aerosol problem in Canada came on the final day of the meeting. Three speakers, Dr. A. B. Blankenship, executive vice-president of Blankenship, Gruneau Research Ltd., Toronto; Frederick P. Kirby, vice-president, marketing, of Foster Advertising, Ltd., Toronto, and Ben Dobrinsky, advertising director of Steinberg's Ltd., Montreal, each spoke for about five minutes and then fielded questions from the floor. Answering a question about why he thought the aerosol has not sold better in Canada, Mr. Dobrinsky ventured that the chief weakness of merchandising methods may be the fact that the consumer is "not aware of the value of the contents and ease of application of the aerosol package". He suggested that the emphasis of the marketer be changed to one of educating the consumer on the attributes of the aerosol package.

Speaking in response to the same question, Mr. Kirby said marketers *must* not lose sight of the fact that the package must sell itself off the shelves of self-service and department stores. Mr. Blankenship, whose company specializes in market research, suggested that the industry might do well to obtain an answer to this problem by "market researching" the large number of small retailers in Canada. Mr. Dobrinsky came back with the proposal that sampling campaigns (in certain areas) and in-store demonstration both offer a valuable means of letting the prospective buyer either see or use the product.

The moderator of the discussion, G. H. Wood, CMCS president and head of G. H. Wood & Co., Ltd., Toronto, reported that the Canadian total aerosol sales of 25 million annually amounts to only 1.5 units per person per year. He said the industry is justly concerned about the fact that "it is selling so incredibly few" units, and hinted that one major difficulty might lie in the

fact that the industry is attempting to sell the word "aerosol", which he contended means little to the ordinary consumer.

Mr. Dobrinsky reiterated the importance of the demonstration, particularly in the department store and other large-volume outlet. "It is up to the marketer to create the demand," he emphasized, "and there probably hasn't been enough communication between marketer and retailer on how to stimulate the demand for these products.

IN his formal talk, Mr. Blankenship suggested that increasingly smaller profit margins, instead of downgrading the importance of market research, should make it more important than ever. The decreasing difference between brands tends to complicate the marketing job, since it makes the marketing decision tougher." He suggested that in the areas of measuring advertising effectiveness, measuring the audience of the various types of media, estimating consumer buying intentions, and evaluating the market for new and different products, market research still has major weaknesses. Too much of it is "past-oriented" and designed to solve specific problems, rather than to provide overall marketing guidance, he pointed out. Explaining the various ways in which market research operates, Mr. Blankenship concluded that from the standpoint of techniques and effectiveness, it has moved ahead *more* in the last four years than it did in the last 35 years.

Distribution of products in the future will change markedly in certain areas, Mr. Kirby suggested. Among the conclusions he advanced are that shopping centers will be more engulfed as the suburbs move outward, the supermarkets will become more like each other, the discount houses will continue to grow, the department stores will win their fight for survival by installation of self-service facilities, voluntary chains and cooperatives will grow, and the dowtown malls and plazas might not be "completely successful" be-

Top: R. L. Jones, vice-president, manufacturing of Colgate-Palmolive Ltd., Toronto, new president of the CMCS, speaks while G. H. Wood, outgoing president listens.

Middle: A. H. Robins, moderator at the forum on tariffs, speaks while L. C. Audette, chairman of the Canadian Tariff Board, and J. A. Davis, chairman of the Chemical Industry Tariff Committee wait their turn.

Bottom: The forum on marketing included Ben Dobrinsky (left), Dr. A. B. Blankenship, and F. P. Kirby.

cause of parking and logistical problems. One major area for chemical specialties marketers to consider, he suggested, is the gasoline service stations, which may constitute the "next retail revolution." He pointed out that some major petroleum companies are already examining the possibility of expanding their product lines with many products now carried exclusively by hardware or food stores.

"Sales promotion should be viewed as an investment rather than as a current expense," declared Mr. Dobrinsky. In the fast-paced modern economy, he pointed out, the shift is needed from production techniques to stimulation of demand. "If business is good, it pays to promote. If business is bad, you've got to promote."

Mr. Dobrinsky emphasized the need for consumer education in selling aerosols. "So far as the retailer is concerned," he suggested, "one major disadvantage in selling aerosols is the lack of provision on the body of the can for price marking. This leaves the package particularly vulnerable to cap switching."

THE second general forum at the CMCS meeting was one on tariffs, and included L. C. Audette, chairman of the Canadian Tariff Board; J. A. Davis, of DuPont of Canada, chairman of the Chemical Industry Tariff Committee; with A. Robins, of Cartier Chemical Co., Ltd., chairman of the CMCS Tariff Committee, as moderator.

In beginning his remarks, Mr. Audette acknowledged that perhaps the Tariff Board may not be familiar enough with the chemical specialties industry, but expressed the hope that the current hearings on Reference 120 would familiarize the board with the subject. He cautioned that the hearings are never exhibitions of forensic skill, and said that "national interest" is always considered above any skills which arguing attorneys might display. "It behooves you in the chemical industry to attend these meetings, since the proposals advanced will let you know which are your allies and which are your opponents," Mr. Audette cautioned.

He emphasized that arguments to change tariff regulations on chemicals must present evidence to demonstrate why the present laws do not meet the best interests of the industry. Rate changes should not be requested unless some justification for such a change is offered. "Cogent need is the prime indicator used for tariff change recommendations, and mere numerical strength of adherents for one particuar course is not enough."

Mr. Davis declared that national policy in Canada is *against* increased tariffs, arguing that patents create a good deal of protection. The usual policy, he pointed out, prescribes that the minimum (or no) tariff be applied to goods not made in Canada. Also, because Canada is a member of the Commonwealth of Nations, Britain and other countries of the Commonwealth receive preferential tariff treatment. He pointed out that any large-scale tariff adjustment on imports from one particular country could result in harmful tariffs on Canadian products shipped to that country.

In the question-and-answer period after the formal presentation, Mr. Audette said that the Tariff Board tries to avoid any rulings that might result in plant closings in any Canadian industry. He said tariffs are designed to provide protection for Canadian industry, but that in certain areas they act as guides to direct Canadians toward more prosperous endeavors. He said Tariff Board policy should never be confused with "Government Policy", since the board is completely independent of the government. In fact, he declared, the Government does not "even indicate informally its policy on tariff matters."

THIS year the CMCS had two brilliant luncheon speakers. The first was Herbert H. Lank, president of DuPont of Canada, Ltd., who spoke on "Selling in the Sixties." "The economy of the world is moving forward at *such* an alarming rate," Mr. Lank said, "that the salesman will have to realize that the market is no longer a bull's eye, but a rapidly moving target." He reported that sales influence in the 60's will be influenced by increased mass leisure, greater mobility of the people, a rising educational level, and an aging population.

"With the sharply increased competition during the next decade," he declared, the "concern for marketing must pervade *all* sections of the company . . . Effective organization, equipment and procedures will have to be more closely integrated to squeeze more out of the dollar." He suggested that there will be more change in the next decade than in any other. There will be more new products and a higher rate of innovation in packaging and technique.

Lt. General G. G. Simonds, former chief of the Canadian General Staff and currently president of the Toronto Brick Co., in another luncheon address, spoke at some length on some alarming trends in the Canadian economy. One of these, he suggested is the current paradox of increase in the gross national product accompanying an increase in unemployment. This, he suggested, is perhaps *more* alarming than it first sounds, since the gross national product is an inaccurate term which includes earnings on services as well as goods produced. "Distributor trades, as against manufacturing trades, are becoming so predominant in our economy that we are in danger of becoming a nation of salesmen living on commissions from foreign products."

Gen. Simonds outlined three noticeable trends in the Canadian economy:

1. Increases in foreign capital in purchase and renovation of Canadian plants. This, he said, is good for the Canadian economy since it adds to employment, production, and brings in foreign talent.

2. A marked increase in real estate investment or in resort property, which adds nothing

(*Continued on Page* 123)

A leading spokesman for the position of the custom fillers, here gives his views on the economics of aerosol filling.

Does it really pay to fill your own aerosols?

*By Harry E. Peterson**
President
Peterson Filling and Packaging Co.
Danville, Ill.

AS IS well known in the aerosol industry, our company has practically no business in Canada, mainly because there are several very competent fillers in the Dominion. Because of this, I have been asked several times: "Why are you making such an address in Canada?" There are several reasons for doing so, but perhaps the deciding one is that I believe it is "high time" that this subject was thoroughly discussed from the viewpoint of the contract filler.

It is obvious that a contract or custom filler should (and in most cases *does*) package products cheaper than the merchandiser himself. This is a rather sweeping statement; but if exact records are kept of all packaging and distribution costs, this is an often-proven truism. The large merchandiser who sells enough volume to keep a production line operating fairly consistently has excessive overhead problems, which, if properly distributed, will bring his unit costs *higher* than those of a contract packager. The smaller merchandiser not having these large overhead costs, doesn't have the volume to justify large capital expenditures.

Also, higher quality standards are usually imposed upon a contract packager than can be exacted from the merchandiser's own production facilities. For example, lithographed can rejects on essentially the same products are higher for the contract packagers than for the captive plant.

A contract filler is forced to keep up to date on all changes in containers, valves, formulations and filling equipment. Extensive and costly laboratory facilities are also readily available to customers. Changes in this industry are *so* rapid that equipment new a few years ago is already out-moded, and the equipment depreciation charge per unit produced will usually be considerably higher than was originally figured. However, more on all of these points below.

IN ORDER to be on common ground in this discussion, a few basic principles will have to be resolved. It must be assumed that

1. We are talking about qualified aerosol fillers.
2. That the filler is able to turn out a product that will equal (if not better) the quality control standards of his customers' captive lines. Frankly, if this isn't done, the filler doesn't belong in the business.
3. That the filler has the confidence of his customers and if necessary does the complete formulating.

Too often I hear that the XYZ Co. will not give formulations to their fillers but rather insists on compounding the active ingredients in its own plants and then ship these, sometimes as concentrates, to the filling plant. The usual reason given for this is the wish to keep the formulation confidential. My only comment on this is that the relationship between the two firms is bound to be short lived. If a filler ever disclosed any confidential information, his business days were numbered. It has often been said that suppliers, or in fact *competitors*, can usually obtain this type of information easier from employees of the XYZ Co. than from their contract filler.

How often does a supplier come into the filler's office and begin expounding about your competitors and giving you little tidbits of information? By so doing, of course, he is following common business concepts and practices. Are we naive enough to believe that if he tells us

* Presented at the third annual meeting of the Canadian Manufacturers of Chemical Specialties Association on Oct. 26 at the Queen Elizabeth Hotel, Montreal.

something that he will not do the same thing to our competitors? I think not. On the other hand, have you marketers ever tried to get any confidential information from a reputable filler? You may have gotten some vague generalities but have you ever obtained any specific data? It is obvious that there must be confidence in the integrity of the contract filler.

Now that we are on common ground, let me state bluntly and unequivocally that to the best of my knowledge there has *never been a captive aerosol line installed that could be justified strictly on an economic basis!* Don't misunderstand me, many managements have approved such installations based upon figures given them by subordinates. But were all of the cost figures included in the presentation? Was there a proper distribution of overhead? Was the cost of the installation calculated only with the packaging equipment in mind or was the building housing this equipment also figured in the cost? Does the individual making the decision know that it takes from eight to ten times the space occupied by the packaging equipment to properly store and warehouse the aerosol components as well as the finished packages? Have the proper obsolescence and depreciation factors been applied? Probably not, and in all fairness perhaps this wasn't done intentionally. But more about the important phase later.

Who Decides When to Install Captive Lines?

Usually, the initial impetus is the equipment salesmen. This is their job, and they naturally make it appear extremely simple and of course extremely inexpensive. They cannot be blamed for this, since they have to justify their existence. They usually contact the engineering or production departments and really "sell" them. These people in turn figure out appropriate savings possible to their firms by installing their own equipment. These figures are turned over to the top management for final decision.

Contract packagers usually find that when a company decides to install its own facilities that either the top management is controlled by a production or engineer trained executive, or that the heads of these departments have a direct pipeline to top management. When the controlling management has come up through the sales, purchasing, accounting, research, or legal departments, the decision is invariably to have the work done by a contract filler.

Sales departments are opposed to captive lines because of their usual lack of flexibility. Assume that a sales manager, for good reasons, wants to change his aerosol package. If his firm has its own or captive line and the new changes do *not* fit into the existing equipment, he certainly has a harder time selling management on his changes, whatever their merit. On the other hand, if the company's packaging is done by a contract packager, it would be taken for granted that the equipment was or would be available to handle the new package.

One of the hardest decisions a contract filler must make is whether a new piece of business justifies the capital outlay for new equipment. Very few orders in themselves justify this expense, so frankly he must second-guess the future trends of the aerosol business.

Packaging Costs

Packaging costs for handling aerosol filling vary widely, and understandably so. The change-over downtime of a small production run quite often takes longer than the actual production time. Obviously, filling charges will have to be commensurate with the time and labor involved. On the other hand, when a line can be set up and run continuously for double or triple shift operations for a week or two at a time, naturally costs will be lower. The nature of the product and the myraid of excess packaging requirements must also be considered.

Too often the complaint is heard that filling charges are too low. In many instances this is true, but in others inefficient operators are using this as an excuse for their lack of business. The margin of profit based upon dollar sales of any filling firm has been compared many times to that of a large food supermarket. It is not unusual to have net profits of less than 1% of sales. Frankly, if the net profits were too much higher, the existence of a contract packager could be questioned. Unfortunately, at times one runs into a situation where a customer or prospect will *play one filler against another.* This occurs despite research and development costs borne by the filler (in initially working out the package), and in some cases after expensive equipment installations.

Some firms put out numerous requests for bids on products which a particular filler has satisfactorily handled for years. One case we know to be true involved a firm losing a $400,000 order because a competitor underbid them by $60. We have heard of bids being lost by someone 5% or even 2% high, but to change because one firm was 15/10,000 of 1% low seems pretty ridiculous.

In all fairness it should be stated that circumstances such as that mentioned above are becoming less and less frequent. We believe the industry is beginning to show signs of maturing. This reminds me of something I read some time ago and I quote:

> "It is unwise to pay too much, but its worse to pay too little. When you pay too much you lose a little money —that's all. When you pay too little you sometimes lose everything, because the thing you bought is inadequate of doing the thing it was bought to do.
>
> The law of business balance prohibits paying a little and getting a lot—it can't be done. If you deal with the lowest bidder it's well to add something for the risk you run, and if you do that you will have enough for something better."

This was written by the English author, John Ruskin, over a hundred years ago and he could not have known that it would be just as pertinent to business dealings today as it was then. He could easily have

(*Continued on Page* 119)

A review of major aerosol developments, with a summary of some of the major challenges still to be met by the industry.

Aerosols—Past, Present and Future

*By S. V. Tuttas**
Vice-President, Sales
Crown Cork & Seal Co.
Philadelphia, Pa.

DESPITE the wide acceptance the aerosol package has so rapidly gained, it might have been better for the purposes of the industry if this acceptance was not quite so general. When a new product like this one takes the world by storm, it is only human nature to hop aboard the bandwagon. However, this is just the time to put such a product under the closest kind of scrutiny.

I'm firmly convinced that aerosol containers are a form of packaging with which we will be living from now on. But to convince those currently not in aerosol packaging, I think a fair and sensible evaluation of the following questions is necessary:

Why do we *need* aerosol containers at all? *What is their reason for being?* The need is a big need—and the reason is one that impresses itself every day on more consumers of a wider variety of products: *Aerosols offer convenience in a can!* And they do so at a price so attractive that it makes *ease-of-handling* the most economic thing a customer can buy.

These two facts explain why aerosol containers represent one of the fastest growing products in North American business today, with an output that approached 600 million units in 1959 and is expected to go beyond 1 billion before the end of 1965.

A SALES record as spectacular as this, piled up in the brief 14 years of aerosol's life as a commercial product, has been made possible only by a continuous search for methods of applying the aerosol principle to *new* products. The breakthrough now in sight in areas where a great variety of chemical products and foods may be processed for use in aerosol containers promises to be as *exciting*, and *as generous* in its benefits to the ultimate consumer, as was the first introduction of aerosols on a commercial basis in August 1946.

Consider what has gone on in this new propellant-packaging field since Dr. Lyle Goodhue helped put together the first aerosol "bug-bomb" (in 1941) as a means of protecting soldiers from mosquitos and flies. The developments which followed on the heels of his first successful attempt to apply a product by spraying it from a container under pressure have constituted a genuine revolution in the packaging industry. No other word can aptly describe what has happened.

Aerosol containers have made possible the practical *everyday* use of products which in the past were either dangerous or unpleasant to use in other ways. They have increased the sales and consumption of products which had suffered previously for lack of suitable dispensers. Hair sprays, for example, first marketed in the late Forties and hardly in sufficient volume to be statistically reported in the year 1950, sold well over 100 million units in 1959.

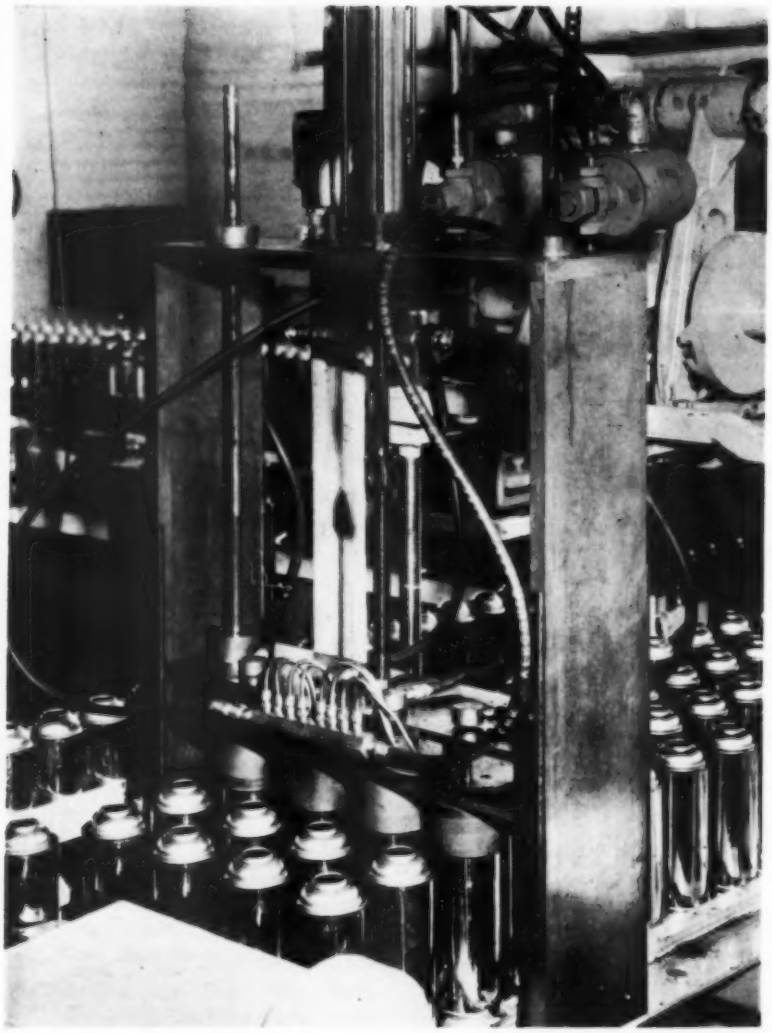
Some of the problems with which we have had to deal in bringing convenience to the public have been formidable. Probably the most serious was that of building a container strong enough, and yet otherwise economical, to withstand the internal pressures of propellants concentrated at more than *100 pounds* to the *square inch*.

The seamless drawn-steel tube eliminated the danger that a can might split at the seams. Crown is the only company now producing both the high pressure seamless can *as well as* the three-piece aerosol can for products requiring lower pressures.

A lot of imagination, plus a willingness to try out any kind of ideas, no matter how impractical they may seem at first, has gone into develop-

(*Continued on Page* 115)

* Presented before the third annual meeting of the Canadian Manufacturers of Canadian Specialties Association on Oct. 25 at the Queen Elizabeth Hotel, Montreal.



Canada's Connecticut Chemicals' line uses three Airmatic valves mounted on top of cleaning fixture. Valve at back of cylinder is LDS-2 which opens to allow compressed air to blow into four cans. Center valve is an LVAC-2 which works by vacuum to withdraw all foreign matter. Valve at right is another LDS-2 which inserts propellant into cans.

Cleaning Foreign Matter From Aerosol Containers

By Earl W. Luesby
Sales Engineer
Pneumatic Industrial Equipment Co., Ltd.
Toronto, Canada

TWO of the most important things the filler of aerosols must do to insure quality are to maintain absolute cleanliness and provide an accurate control of pressure in the cans. Connecticut Chemicals (Canada) Ltd. in Toronto, Canada, has shown that proper selection of equipment makes quality economical.

Emulsions such as shaving cream, furniture waxes, upholstery cleaners, and tooth paste are made on Connecticut Chemical's new filling line. In order to insure cleanliness, the company has equipped this line with an unique fixture to insure that the cans are clean and free from moisture. Cans approach the fixture on a metal conveyor belt in single line. A chain with indexing fingers picks the cans from the single file and groups them in fours until four indexing chains move a line of four cans to the fixture. The fixture has two stations. At the first station are four cups which come down and seal four cans. As soon as the cans are sealed, air is blown into the cans to stir up any foreign matter that might have gotten inside.

A common practice to clean the containers of any foreign matter has been to simply blow air into them. Connecticut Chemicals' approach, more painstaking, consists of first blowing in air, and then pulling a vacuum on the cans to make sure that all foreign matter is *removed* rather than just *stirred up*.

For effective economical removal of foreign matter, the time interval during which compressed air is blown in the cans must be accurately controlled. This is done with a solenoid valve manufactured by Airmatic Valve, Inc., Cleveland, Ohio, a fast-acting LDS-2 with unusual construction. There are only two moving parts in the valve—a poppet and the solenoid pin. The solenoid is of a large size (can be operated continuously) and is connected directly to the poppet, providing a positive, high-speed action with short plunger travel.

Energizing the solenoid forces the poppet downward. It is easy to start

the poppet downward as the spring is just strong enough to balance the weight of the poppet. A hole drilled through the poppet and solenoid pin permits the air under the poppet to exhaust thru the "out" port.

While the valve is open, the pressurized air enters the space under the poppet thru the drilled hole and builds up pressure underneath (plus that underneath the top flange of the poppet) forcing it closed. The poppet is held closed by air pressure, the weight of the poppet itself being balanced by the spring. The spring does not provide sealing force.

The LDS-2 valve is energized by a microswitch which is closed by a cam. The cam is mounted on a shaft that turns in exact relationship to the indexing chains that move the cans under the cleaning fixture. The cams are adjustable so that the length of time the microswitch is closed (and hence the LDS-2 valve is open) can be adjusted to the size of can that is being run on the line. The cams consist of two halves each fastened to the shaft by a set screw. To lengthen or shorten the time the switch is closed, all that need be done is to loosen one half of the cam (depending on whether the beginning or end of the stroke is to be changed) and move it forward or backward, depending on whether the stroke is to be lengthened or shortened.

Another cam on the shaft actuates the switch that energizes the valve that controls the vacuum line. The cam is set so that an Airmatic valve, an LVAC-2, opens and starts to draw a vacuum while the LDS-2 valve is allowing air to blow into the can. By having both valves open at the same time, air rushing in stirs up any foreign matter and the vacuum line pulls it out. This is a marked improvement over the method which just uses an air blast in the hope that all of the foreign matter will be blown out of the can rather than part of it resettling to the bottom of the can.

The LDS-2 valve controlling the entrance of air is shut off shortly after the LVAC-2 valve opens the vacuum line to the cans. The length of time the vacuum line is open depends on the size of can being filled and is controlled by the cam. The LVAC-2 solenoid valve must withstand a vacuum of 17 to 18 inches of mercury created by a separate unit installed just to create a vacuum on the aerosol line. Four features make reliability a built-in property of the LVAC-2 vacuum valve:

1. The valve delivers full-capacity air flow. There is no pressure drop and no venturi effect within the valve itself.

2. It uses a low-amperage solenoid. The inrush current is 5.5 amperes; the sealing current is 0.8 ampere at 110 volts AC, 60 cycles. Low current consumption prolongs the life of the solenoid. The valve poppet has a spring booster to balance weight of the moving poppet. The spring and vacuum hold the valve closed, with the vacuum supplying most of the sealing; the solenoid opens the valve.

3. Airmatic uses a Vecco Mass Spectrometer to 100-percent inspect all vacuum valves. The mass spectrometer uses helium as a tracer. It is sensitive enough to detect 1 part leakage of helium in 10 million parts of air. This is equivalent to 10^{-10} cc leakage per second. Each valve must pass this leakage test before it is released from the factory.

4. The valve poppet and its guide are a complete assembly. After the poppet and guide are assembled, the O-ring seat in the poppet is precision grounding to assure 100 per cent parallelism with the valve seat. The poppet guide bottom seats against the housing. End of the housing and the valve seat are machined in one setup so the O-ring has exactly the same sealing pressure around its entire surface.

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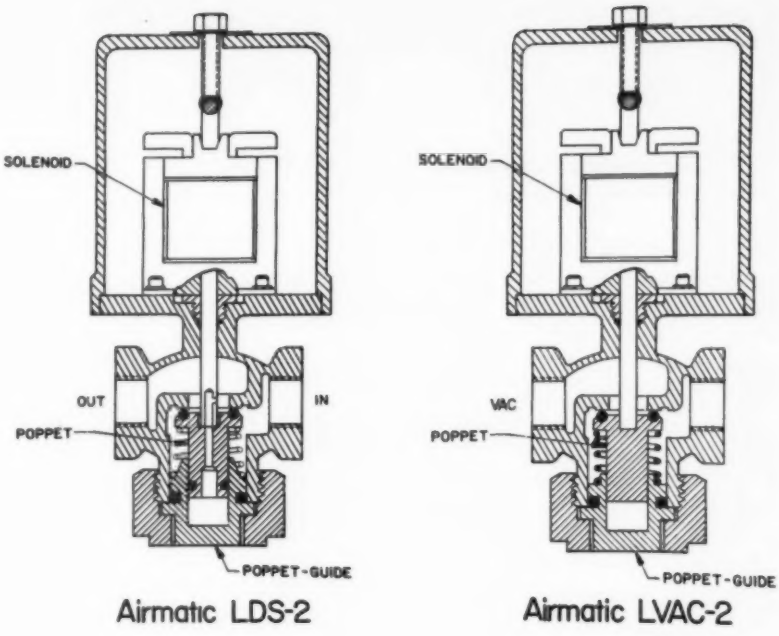

Cross section of valves. LDS-2 unit (at left) has solenoid connected directly to poppet to provide positive action with short plunger travel. Energizing solenoid forces poppet downward, which permits incoming air to enter to build up pressure underneath. Deactivation of solenoid helps force poppet closed. In LVAC-2 valve, vacuum solenoid is direct-operated. Valve features only two moving parts, with low-amperage solenoid.

Packaging Forum Held in New York

Toppings Said to Do Pressurized Food M Margin Seen at 90

THE CURRENT yearly production of food aerosols has reached about 100 million, W. E. Graham, vice-president of the Clayton Corp., St. Louis, told the 22nd annual National Packaging Forum on Nov. 2. The Forum, held Oct. 31-Nov. 2 at the Statler-Hilton Hotel, New York, was sponsored by the Packaging Institute. At the conclusion of the Forum, Mr. Graham's paper received the Technical Operations and Planning Board award of the Packaging Institiute as the most outstanding of more than 50 technical papers presented at the Forum.

Pointing out that the current consumption of aerosol foods is about one-half can per capita yearly, Mr. Graham declared that "there would appear to be ample opportunity for their continued increased volume. In fact, some people think that the hoped-for upsurge in food aerosols may just be more aerated toppings."

Further reinforcement of this last argument, Mr. Graham suggested, might be in the fact that the many other food types introduced on the market (coffee, barbecue sauce, seasonings, vitamin syrups, meat tenderizer, fruit flavored syrups and chocolate syrups) probably account for not much over five to 10 million cans in any one year!

Turning to the mechanics of packaging pressurized foods, Mr. Graham first quoted pertinent ICC regulations which apply to foodstuffs packaged with CO_2 and N_2O: "The pressure in the container must not exceed 115 psia. at 70°F. or 150 psia. at 120°F. The metal container must be capable of withstanding without bursting a pressure of two times the pressure of contents at 70°F. or one and one-half times the pressure of the contents at 130°F., whichever is greater."

Mr. Graham cautioned that these temperature - pressure relationships, while not "too critical" for aerated toppings distributed and stored at refrigeration temperatures, *can* be critical in such newer products as chocolate and other syrups which are stored at room temperatures. For these, he said, "container design and construction relative to metal fatigue needs to be fully evaluated before deciding on the final working pressure."

Valve selection can be highly important in the success of the marketed food product, he said, mentioning such factors as flow and delivery rate, orifice size and clogging, crystallization of product in valve, corrosion, ease of actuation, and directional characteristics as key items of study.

On the subject of propellants, Mr. Graham had this to say: "One of the arts of formulating food aerosols has been that of manipulating product, gas, and valve design so that the lowering of dispensing pressure as the contents are used has a minimum effect on overrun degree of foaming, or the spray pattern. To further minimize this drop-off in pressure, a greater headspace is used for food aerosols than for non-foods using liquefied gases or for conventional food packs. Thus, for a 16-ounce container, a normal fill for whipped cream may be about 10 ounces. Since pressurizing is a more efficient method of whipping cream than mechanical incorporation of air by beating, this filling ratio cannot be considered adversely since it appears to be an inevitable accompaniment of the aerosol method. A pressure drop-off on a properly formulated aerosol should have little significant effect on product quality."

At one point in his paper, Mr. Graham suggested that the apparent increased cost of food aerosols need not be a hindrance to their accept-

Lewis Wins Professional Award

Charles A. Lewis, director of the Containers and Packaging Division, Business and Defense Services Administration, U.S. Dept. of Commerce, was named recipient of the Professional Award of the Packaging Institute for his major contributions to the field of packaging. He was honored for his "accomplishment in the welding or melting together of almost 50 separate industries, basically most competitive, into a recognized and clearly defined major segment of our industry complex, the packaging industry." The Packaging Institute said Mr. Lewis has "made government officials conscious of packaging, and has spearheaded efforts to keep government procurement specifications tailored as closely as possible to commercial practices. He has been a strong proponent of government-industry cooperation and understanding, and is recognized by the Food and Drug Administration, the Dept. of Agriculture, the Dept. of Defense, and other government departments and agencies as the focal point for packaging within the government."

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Zahn is Elected Packaging Institute President

Lawrence H. Zahn, director of the Purchasing and Package Development Division of Ciba Pharmaceutical Products Inc., was elected president of the Packaging Institute at its 22nd annual National Packaging Forum at the Statler-Hilton Hotel, New York. He succeeds Charles W. Kaufman, director of research and development, National Dairy Products Corp., who becomes an ex-officio member of the board of directors.

The board of directors also elected as vice-presidents and members of the Executive Committee Fred W. Langner, package coordinator, Socony Mobil Oil Co., Inc., vice-president and treasurer; Allyn C. Beardsell, Mead Containers, Inc., New Products Div., vice president-membership, and Iven G. Nichol, assistant sales manager, Morningstar-Paisley, Inc., vice president-Annual Forum.

Dr. L. E. Simerl, director, Olin Mathieson Chemical Corp., was re-elected vice president in charge of committee activities. Charles A. Feld was re-elected executive director for the coming year.

The new president has been active in many industry and government projects since joining Ciba in 1944. Called to Washington in 1957, Mr. Zahn served for six months as Deputy Director, Containers and Packaging Division of the Business Defense Services Administration of the United States Department of Commerce. In addition to his duties at Ciba, Mr. Zahn is public relations chairman of the National Association of Purchasing Agents, North New Jersey Chapter; past chairman of the Production and Engineering Section, Pharmaceutical Manufacturers Association; member of the Committee for Economic Development (CED), Industry Finance Committee; and a member of the Curriculum Advisory Committee, School of Packaging, Michigan State University.

ance by the public. "If this analysis is valid, and I believe it is, it would appear that the lag in development of food aerosols is not one of economics alone. Relative to this, it should be stated that under current conditions, it is very difficult—if not economically impossible—to package and distribute any food aerosol of any type much under a unit retail price to the consumer of 49 cents."

THE RAPID growth of the aerosol market is attributable mainly to products such as hair sprays, shaving cream and insecticides, which had been impossible to make in spray form before the advent of the aerosol package, Morris J. Root, technical director of G. Barr & Co., Chicago custom filler, told a forum on drug and cosmetic packaging at the Packaging Institute Forum. "Products which have been introduced in aerosol form," he continued, "have *far outstripped* the sale of the same products in conventional packaging where the self-pressurized pack has utility. The pressurized package must have more than 'gimmick' appeal. It must be functional."

Appraising the next decade of aerosol progress, Mr. Root explained: "The last ten years have proven that the public has accepted the pressurized package, first with skepticism, then with trial, and now with acclaim. There is every indication that the next ten years will equal the last ten, which can only mean that in 1970 there will be some 2.4 billion pressurized packages produced."

Analyzing the substantial growth of the aerosol market over the last decade, Mr. Root attributed it to the following factors:

1. Availability of low-cost, low-pressure metal containers.
2. Development and production of reliable, low-cost valves.
3. Availability of fluorinated hydrocarbon propellants.
4. Development of such inert-gas-propelled products as toothpaste.
5. Improvement of propellant systems to incorporate hydrocarbon propellants.
6. Availability of plastic-coated glass, aluminum, and stainless-steel containers.
7. Formulation and market development of products hitherto impossible without pressurized containers.
8. Acceptance by the public of this type of package.

Mr. Root explained in detail the new "under-the-cup" filling method, which he suggested has been important in improving line speeds. "The sealed-off space above the container is evacuated, the valve cup is lifted, the propellant filled into the container, and the valve crimped in place. This sequence of operation is done on a rotary head."

ANOTHER well-known aerosol industry figure, Anthony Iannacone, technical director of Fluid Chemical Co., Newark, N. J., also spoke at the Forum, but his subject, "Plastic Container Use Possibilities in the 60's," mainly dealt with non-aerosol containers. He discussed handling and movement of empty plastic containers on the filling line,

(*Continued on Page* 124)

Cyanamid Package Wins

A new method of packaging sterile surgical sutures, developed and marketed successfully by the Surgical Products Division of American Cyanamid Co., Danbury, Conn., has won the Corporate Award of the Packaging Institute. The new concept consists of a hermetically-sealing bonded polyethylene-polyester material currently in wide use in U.S. hospitals.

Typical of the aerosol displays at the Stuttgart show were these. In the photograph at bottom left is shown the entranceway to the small movie theater, the feature of the Farbwerke Hoechst exhibit, where the company's aerosol movie was shown.

Aerosols Are Well Represented at International Druggists' Show

By Dr. Tom C. Clark
Druk-Pak, Zurich
Aerosol Age European Representative

THE INTERNATIONAL Exhibition for Druggists and Drugstores, "INDROFA," held in Stuttgart in September, gave a convincing demonstration of the aerosol progress made in the cosmetic and household product industries in the past two years. Due to the extent and variety of products exhibited, druggists were easily informed about everything new and, by use of the widely advertised slogan of the trade: "Ask your Druggist," could prepare themselves for customers' questions. For the unhurried, observant visitor, there was much new to be seen, but of special interest were the aerosol exhibits to which many companies, for the first time, gave featured space. At this association's 1958 exhibition at Frankfort, aerosols played an inconspicuous role, but this Stuttgart fair a mere two years later, clearly showed how the pressure package has captured the market. There is no miracle about this, since the aerosol package offers so many inherent advantages to the consumer. No one in the marketing system is better placed than the druggist to explain these many advantages, since he is the one who daily meets the consumer face-to-face. His judgment, selection and offerings are relied upon; and he is the one who gets the first complaints (if there are any). Unless the druggist knows his products and their applications, he is in no position to explain them.

Attractively arranged stands put aerosols in the foreground, while some companies, convinced of the merits of their products, supplemented their container exhibits with placards. An important position was naturally taken by the aerosol hair fixative products, since scarcely any other product has so captured the market. Without exception, aerosols were on exhibit in every hall.

Not unimportant in the druggist's program are space and personal deodorants, the advantages of which were cleverly illustrated by many manufacturers in their exhibitions. The many advantages of the sun tan spray have become so well known in Europe that any number of companies now offer their old and well-known products in the aerosol package. Also, the industrial, household and hobby products found their place at this "INDROFA" Fair. A long-unfulfilled dream of the hobbyist was realized in a handy paint aerosol. With the few photographs accompanying this article, it is naturally impossible to show all aerosol products exhibited at the "INDROFA" 1960 Exhibition. Also to be seen were such products as polishes, powders, athlete's foot products, perfumes, silver lacquers, shaving lathers, spot removers, hair colorings, hand creams, furniture polishes, moth-proofers, plant sprays, dog shampoos and water and moisture repellants. The product field is rapidly expanding even to butane lighters on long extension poles for high church candles.

As is customary with all new products, the druggist must be prepared on a host of questions about their use and application and he must understand the principles and techniques of the package. In this area, also, the Exposition was prepared. Farbwerke Hoechst, Europe's largest manufacturer of fluorinated hydrocarbons (sold under the trade mark "Frigen"), featured a special movie theatre. Every half hour, to "standing room only," Hoechst showed its slide film with sound track ("The customer wants to know exactly"), which explains the aerosol package from all angles and answers those important questions: "What is there to this package and how is it used?" or: "How do I apply this?" The film also covers the price angle and demonstrates that for only a very few pennies more, the practicality and handiness of the pressure package is clearly worth the difference.

The heavy attendance at Farbwerke Hoechst's cinema attraction was a satisfying demonstration of the market interest for aerosols, particularly from the younger generation of druggists and their employees who were eager to know about all phases of the packages, propellants, valves, cans, labels, storage, etc.).

In conclusion, it may be said without reservation that for the German market the INDROFA Exhibition for 1960 has clearly illustrated the importance and success of the aerosol package.★

J. A. Willis | James Sheridan | Elliott Averett

Business Finance Session, Aerosol Quality Control Highlight CSMA Program

A SPECIAL panel on quality control in the aerosol plant, patterned somewhat after the highly successful Aerosol Technical Clinics of last year, will highlight the program at the 47th annual meeting of the Chemical Specialties Manufacturers Association, Hollywood Beach, Fla., Dec. 5-8. Also of interest to aerosol executives will be a session on business management topics by executives of some of the major companies in the chemical and banking business.

The Division's session on Wed., Dec. 7, will be highlighted by three talks on fundamental business management topics. Elliott Averett, vice-president of the Bank of New York, will talk on "Financing Growth Industries." James Sheridan, vice-president and treasurer, Allied Chemical Corp., will speak on "Credit Fundamentals: Dynamic or Static." John A. Willis, assistant secretary and assistant treasurer, Union Carbide Corp., will discuss "Guideposts for Evaluating Profit Performance."

The second portion of the program will be a panel discussion devoted to "Quality Control in the Filler's Plant." Experts on the panel will review current techniques and developments in this phase of production, with George Barr, president of G. Barr & Co. (chairman-elect of the Aerosol Division), as moderator. Panel speakers will include:

Valves — Norbert Brusky, aerosol product quality control supervisor, S. C. Johnson & Son, Inc.

Containers — Russell P. McGhie, supervisor of package construction, Toilet-Articles Division of Colgate-Palmolive Co.

Propellant and Propellant Systems—Donald Dean, manager of control and analytical laboratory, Shulton, Inc.

Concentrate and Concentrate Systems—S. J. Campbell, vice-president, Continental Filling Corp.

Production Line Filling and Weighing Station—S. J. Campbell.

Water Bath Spray Checking Systems—S. J. Campbell.

Laboratory Quality Control Procedures—D. H. Terry, director of research, Boyle-Midway Division of American Home Products Corp.

Special Quality Controls for Pharmaceuticals—John C. Armstrong, Armstrong Laboratories, Inc.

Special Quality Controls for Foods—Clarence Clapp, vice-president, Western Filling Corp.

What Quality Control Procedures a Marketer Expects of His Filler—Dr. T. Harrison, new products manager, Lehn & Fink Products Corp.

Application of Statistical Quality Control to Aerosol Filling—E. K. Kitow, G. Barr & Co.

Following the panel discussion there will be a question-and-answer period using written questions submitted from the floor or in advance of the meeting.★

Spray-Grip, an aerosol adhesive, has been introduced by Avery Label Co., New York. Crown two-piece container is equipped with a Newman-Green valve and is said to contain the equivalent of 32 ounces of rubber cement.

Foam Tone is a new tinter and cleaner for upholstered furniture and rugs. 15-ounce can, retailing at $1.98, is claimed to cover about 100 square feet of material. H. Talbot Co., Cincinnati, is the marketer.

Cilux Spray Paint is a new line of Canadian Industries, Ltd., Montreal, in 16-ounce containers. Aerosol Packaging of Canada, Ltd., Scarboro, Ont., is the filler.

Hot Rod Primer is an addition to the spray paint line of Krylon, Inc., Norristown, Pa. Said to be lacquer resistant, it dries in 15 minutes. 16-ounce unit retails at $1.79.

NEW PRODUCTS AND PACKAGES

The famous Lanvin **Arpege** and **My Sin** fragrances are now being marketed in these new black and gold metal containers made by Bridgeport Metal Goods Manufacturing Co., Bridgeport. The three sizes, two-ounce and 10cc., are similar in design, but the two-ounce is designed to accommodate a refillable glass bottle while the others are used for replaceable stainless-steel bottles. All three packages use a VCA "B 18F" metered valve.

Emerald Herbs, Winnetka, Ill., has just introduced a new line of seasonings, including **Meat Mist, Fish 'N' Fowl Flavoring, Salad Spray, Dill, Tarragon,** and **Thyme.** Packaged by Peterson Filling, the line uses Wheaton plastic-coated bottle, Newman-Green valve, and container design was done by E. J. Pfiffner, staff artist for the Chicago Natural History Museum. A "Carry Caddy" set of the products will retail at $8.95.

Perfumes Anjou New York, has introduced its **Devastating** and **Side Glance** in metered packages. Peerless Tube ¾-ounce unit is equipped with a VCA B-18F metered valve and is filled by Marcy Laboratories, Inc.

Shulton, Inc., is marketing its line of spray colognes in this new type "jewel-like" uncoated glass container by Foster-Forbes Glass Co.

DuBarry, New York, has introduced its **Seven Winds Mist Supreme** in this Bridgeport Metal Goods refillable metal case equipped with a VCA metered valve. A 2-ounce Foster Forbes uncoated bottle is being used with plastic-coated refill bottle by Wheaton Plastics. Fluid Chemical is the filler.

Ciro, New York, is marketing its three popular fragrances in this gold-lacquered aluminum "Vaniti-Mist" container by Risdon Manufacturing Co. Equipped with a Risdon metered valve, it uses an uncoated glass bottle by Foster Forbes. Stalfort Pressure-Pak is the filler.

This article, final of a series of three, concludes what will likely be recognized as the most complete and most informative work ever written on this important subject.

The Technical Aspects of Aerosol Air Fresheners

Part III

In this installment, Mr. Johnsen discusses the glycols and the quaternary salts as deodorant materials.

By Montfort A. Johnsen

Director of Research
Peterson Filling & Packaging Co.
Danville, Ill.

The Glycols as Deodorants

The deodorant aspects of air sterilizing methods have been recognized since the classic work of Lister in 1868. Hypochlorite and resorcinol sprays were preferred for the control of both odor and bacteria until about 1940,[75] at which time hexylresorcinol was discovered to be much more effective. In 1941 air treatment programs based on hexylresorcinol were set up to protect the health of people crowded into air raid shelters in England. It was during this period that a particular spray containing hexylresorcinol was found to be vastly superior to any of the others. This spray was unique in that it contained about 90% propylene glycol as the carrier, mainly because of the persistent mists that could be formed.

Investigations soon disclosed that the glycol had antiseptic properties on a par with those of hexylresorcinol itself. Its lethal action was found to result from the condensation of vapor onto the droplets or motes car-

rying bacteria, so that an antiseptic solution was formed which killed the pathogens.[76]

Tests were then conducted to determine the relative toxicity of several glycols. Triethylene glycol was found to be most effective, 0.2 gram being sufficient to create near-sterile conditions in a room of 1,000 cubic foot volume. On the same basis, 2.0 grams of dipropylene glycol or about 18 grams of propylene glycol were required for the same result. Glycerol was without value. The rate of kill was found to be greatest at 15% to 40% humidity, and under these conditions triethylene glycol vapors destroyed 85% of all bacteria within one minute and essentially 100% in three minutes.[77]

The use of glycols in deodorant aerosols was described as early as 1948.[78, 79] It was of prime importance to atomize the glycols into very fine mists which could vaporize quickly, and this dictated the use of small percentages of glycol with large amounts of propellant. Because of these requirements, practical limits for glycols are usually set at 10% of the total formula.

About 0.3 gram of triethylene glycol is necessary to treat a large room of about 1,500 cubic foot volume. The early aerosols had delivery rates of about 0.75 gram per second, so in order to sterilize a large room by using a typical ten-second burst of spray, the aerosol had to contain a minimum of 4% triethylene glycol. This concentration is generally preferred, even in more modern formulations.

Triethylene glycol has a vapor pressure of only 0.001 mm. Hg° at 68° F., so the concentration of 0.2 gram per 1,000 cubic feet of air corresponds to virtually 100% of vapor saturation. This is the preferred level, since it provides maximum control without the bothersome fogging effects that occur when the droplets cannot vaporize. Reduced to practice, these ideas indicate that concentrations higher than 4% triethylene glycol should be avoided.

No real advantages appear to derive from the use of other glycols, either in addition to triethylene glycol or by themselves. A spray containing 8% dipropylene glycol is about 20% as effective as the standard, and the bactericidal activity of propylene glycol is nil at levels obtainable via aerosol spray methods. Some of the reasons cited for the use of propylene glycol are that its very low surface tension provides the condensed vapor with superior wetting and penetrating ability to aid in killing bacteria and virus embedded in dust motes. It is also said to reduce the supposedly slight irritational effects of triethylene glycol in the pulmonary system. Finally, because propylene glycol is widely recognized by the layman as a sanitizer, it is a desirable ingredient to name on the product label. The similarities in surface tension and blandness between the two glycols tend to cast doubt upon the importance of the first two reasons.[80, 81] Polyglycols have also been used in air fresheners, such as polypropylene glycol (M.W. = 600),[82] but their bactericidal abilities are not as well established as those of the simpler glycols.

The manner in which glycols control odors is just beginning to be understood. It is known, for instance, that some glycols have an affinity for sulfur-bearing organic compounds and can form complexes with them. The importance of this mechanism, however, has never been checked out in any deodorizing problem.[83] By condensation, glycol vapors are said to encapsulate air-borne particles which might be odor carriers. This mechanism is also used to explain the action of glycols on surfaces where they effectively destroy odor-causing bacteria, and thus halt many processes of putrefaction and spoilage which give rise to offensive smells.

In spite of their undoubted ability to sterilize air, there are many who seriously question the merits of glycols when dispensed as aerosol mists.[84, 85] The germicidal effects of glycol room sprays are said to be negligible under conditions of use found in the home.[41] For proper control a glycol vapor concentration of over 50% of saturation should be maintained at all times, since the air is being constantly reinfected by the occupants. Benefits are also negligible when there is much dust in the air, if the humidity is over 60%, or if the air is being renewed from an external source.[86]

A comparison of the physical properties of glycols used in air deodorants is made in the following table:

Property.	*Propylene Glycol.*	*Dipropylene Glycol.*	*Triethylene Glycol.*	*Polyglycol P-400.*
Specific Gravity; 20° C.	1.040	1.022	1.125	1.007
Refractive Index; 25° C.	1.431	1.439	1.431	1.445
Color	None	None	None	White
Boiling Point (or I.B.P.)	411° F.	450° F.	545° F.	369° F.
Melting Point (or Pour Pt.)	—76° F.	—38° F.	—20° F.	—19° F.
Flash Point	215° F.	250° F.	340° F.	390° F.
Acid Number	0.004	0.008	0.008	0.008
ph Value	4.0	5.0	5.0	6.0
Viscosity; 25° in cps.	44	74	38	70
Optical Rotation	0	0	0	0
Moisture Content	0.04%	0.06%	0.04%	0.05%

Dipropylene glycol, tripropylene glycol, the polypropylene glycols and a few others of minor importance are soluble in the common aerosol propellants and can therefore be formulated very easily. This is *not* the case with the more useful glycols. Propylene glycol, triethylene glycol, and the polyethylene glycols are quite immiscible in propellants and require the addition of a cosolvent to the formula. The most common cosolvents are ethanol and isopropanol, but methylene chloride has also been used. The type and percentage of the glycol will determine the amount of co-solvent necessary to provide a soluble system. Higher amounts of cosolvent are needed if the formulation is to be filled by single-stage refrigeration, because the soluble system will then have to be chilled to low

Ingredients.	XXVIII.	XXIX.	XXX.	XXXI.	XXXII.	XXXIII.	XXXIV.	XXXV.
Triethylene Glycol	7.5	—	—	—	5.0	3.5	5.0	5.0
Dipropylene Glycol	—	7.5	7.5	—	2.5	3.5	—	—
Propylene Glycol	—	—	—	7.5	—	—	5.0	5.0
Perfume	0.5	0.5	0.5	2.0	—	0.5	0.2	1.0
Ethanol (Anhydrous)	—	—	—	7.5	—	—	—	—
Isopropanol (99%)	—	—	—	—	—	12.5	9.8	9.0
Methylene Chloride	30.0	—	46.0	—	—	—	—	—
Propellant-11	16.0	46.0	—	41.5	41.5	40.0	40.0	40.0
Propellant-12	46.0	46.0	46.0	41.5	41.5	40.0	40.0	40.0
Reference	(88)	(89)	(89)	(33)	(33)	(47)	(41)	(41)
Year Published	1955	1955	1955	1958	1958	1959	1958	1958

temperatures. As a general rule, the co-solvent runs from 15% to 25% of the total formula.[87]

The most efficient and widely used glycol co-solvent is isopropanol. Many people associate its characteristic odor with that of "rubbing alcohol" and attach medical significance to air fresheners in which it is used. Isopropanol has other advantages. For instance, it does not change on aging and generate products which promote corrosion or create off-odors. It is also the least expensive of the co-solvents.

When ethanol is used, a more cosmetic type spray is achieved. The slight bitterness of ethanol vapors is just enough to cancel the sweet glycol odor in well formulated products. Perfume overtones can be used to maximum advantage against an ethanol background. Great care must be exercised, however, to make certain that such formulas are stable throughout a reasonable shelf-life. Moisture should be kept to a minimum.

Two good rules are to purchase ethanol under a specification of 225 ppm. of moisture or less, and to formulate the product in a pressure-tight system. It is also a good idea to eliminate oxygen from the head space of the dispenser either by mechanical purging or by refrigeration filling methods.

Many ethanol type deodorants are further protected by the addition of trace quantities of inhibitors. Either 0.05% propylene oxide or 0.08% 1,2-butylene oxide may be added to take up tramp moisture. These compounds are also thought to have some degree of deodorizing action. Dioxane has been used at levels of about 0.2%, and certain quaternary ammonium salts are also effective.

Aside from their inhibiting action, many quaternary salts are used in deodorants to improve the bactericidal activity. Phenylmercuric compounds and a few anti-biotics are also used upon occasion. Many of these chemicals are salt-like in nature and require the presence of a polar solvent in order to dissolve properly.

Very few major improvements have been made in the formulation of glycol deodorants within the last ten years. As a matter of fact, many products are now on the market where the selection of ingredients is such that the beneficial effects are vanishingly small—even on a temporary basis. A few of the published formulations are presented in the table at the top of the page.

There now appears to be a tendency toward product standardization, with triethylene glycol being used at the optimum level of 4%, generally backed up with smaller amounts of propylene glycol. Although a wide selection of fragrances is used, the essential oil concentration usually falls close to 0.4%. A small percentage of an auxiliary germicide, such as the quaternary ammonium salts, is now being used in most glycol-based formulas. Two compositions are now presented in order to illustrate these ideas:

Ingredients	XXXVI.	XXXVII.
Triethylene Glycol	5.0%	4.0%
Propylene Glycol	3.0%	4.0%
Perfume	0.3%	0.2%
Quaternary Salt	0.1%	0.1%
Ethanol (Anhydrous)	24.6%	—
Isopropanol (99%)	—	22.2%
Methylene Chloride	8.0%	4.0%
Propellant-11	18.0%	27.0%
Propellant-12	42.0%	33.0%
Iso-butane	—	6.0%

A special type of formulation is used in the so-called "Nasal Relief" spray. In addition to the menthol, eucalyptol and camphorous compounds which characterize these products, they may also contain small amounts of various glycols in order to gain a sanitizing effect. The nasal relief sprays give temporary abatement of the congestion caused by hay-fever, catarrh, bronchitis, the common cold and similar ailments which result in the inflammation of upper respiratory passages. The method of use often varies. The aerosol may be sprayed into the air in confined areas, or it may be sprayed onto a handkerchief or pillow for longer lasting protection. Three representative formulations are now presented:

Ingredients.	XXXVIII.	XII.	XL.
Triethylene Glycol	1.25%	4.00%	3.00%
Propylene Glycol	—	3.00%	1.00%
Dipropylene Glycol	2.50%	—	—
Menthol	0.50%	0.30%	0.40%
Camphor	0.50%	0.60%	0.60%
Thymol	0.10%	0.15%	0.15%
Eucalyptol	0.15%	1.20%	—
Oil of Cinnamon	—	0.15%	—
Quaternary Ammonium Salt	—	—	0.10%
Chlorbutanol	—	0.30%	—
Methyl Salicylate	—	0.15%	—
Isopropanol (99%)	—	15.15%	14.75%
Propellant-11	47.50%	40.00%	40.00%
Propellant-12	47.50%	40.00%	40.00%
Reference	(90)	(91)	(91)
Year Published	1958	1960	1960

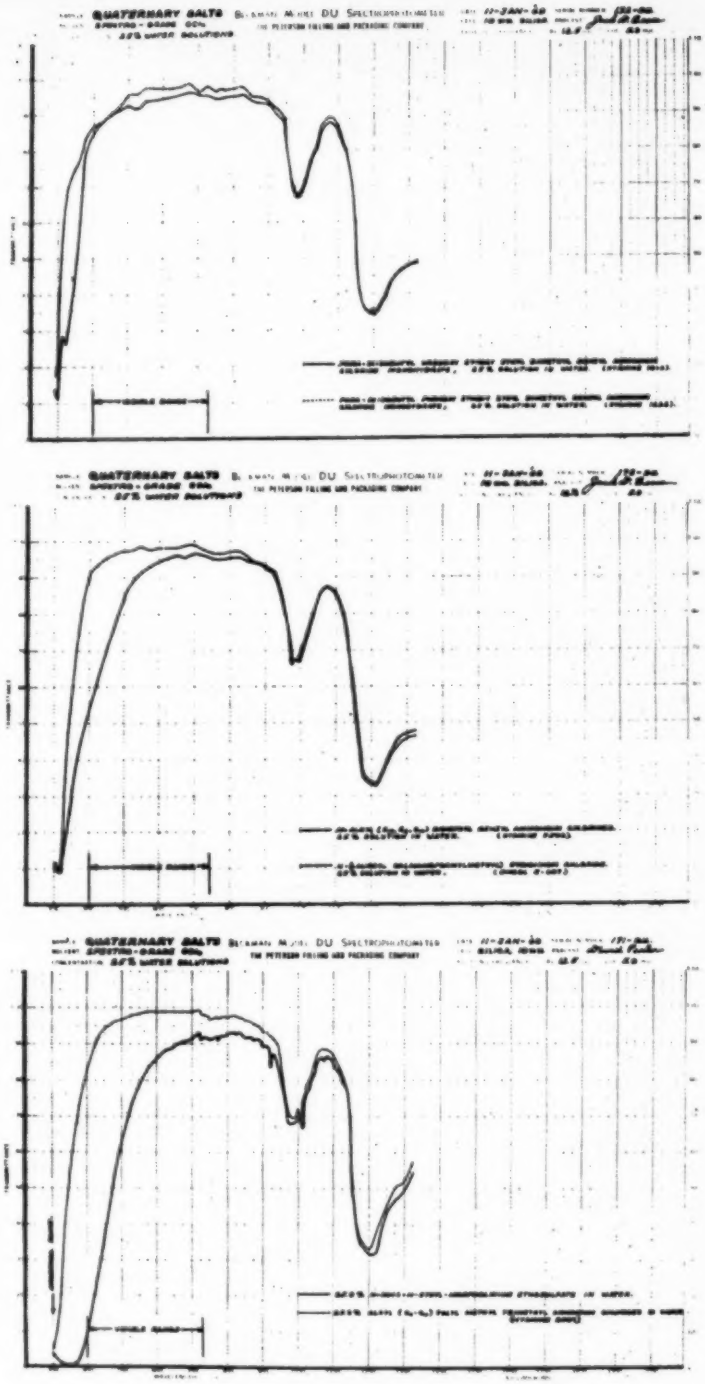
Glycol formulas can be safely packed in plain tinplate cans, provided moisture and oxygen are at a minimum. Isopropanol, ethanol and several of the simple glycols are so hygroscropic that water vapor is picked up from the air very rapidly. It is therefore advisable to prepare these solutions in closed or positive pressure systems, particularly if they are to be handled under refrigerated conditions. Careful compounding gives a product containing less than 0.02% moisture. Oxygen is best removed by using refrigeration filling methods. Its partial pressure in the finished aerosol can be reduced to less than 0.5 psi.

Nasal relief sprays may also be packaged in plain tinplated cans. Corrosion problems have always plagued these formulas, and every precaution should be taken to assure a good shelf-life. In addition to the general measures cited for glycols, substantial test pack evidence should be available to justify production of any nasal relief spray. The use of ethanol is contra-indicated. By some unknown mechanism it is thought to react with camphorous ingredients to give rise to oxygen transfer products which are both unpleasant and corrosive. Organic inner linings are generally of little protection, being either loosened or stripped from the can.

When properly packaged, both the nasal relief spray and the straight glycol formulas are quite stable. Cans opened after eight years' storage have shown only mild detinning and no real evidence of product deterioration.[92] Weight losses are within the anticipated range, averaging about 0.1 Av. oz. per year.

Quaternary Salts as Deodorants

The quaternary ammonium salts are formed in nearly quantitative yields by the Hofmann Reaction, where an alkylating agent reacts on a solution of ammonia. By applying special techniques to this basic reaction, quaternary compounds can be prepared in which either two, three or all four alkyl groups are different.



Spectrophotometric curves for The Quaternary Salts

The ease and versatility of the Hofmann synthesis has thus made a large group of new compounds available for industry.

One of the first applications of the quaternary ammonium halides was found in the field of disinfectants, where their germicidal ability and mildness made it possible to formulate products of exceptional merit. Certain quaternary compounds were preferred for this work, especially the very active detergent types, which were characterized by structures con

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schimmel

Newburgh, N. Y.

taining a simple aromatic ring, attached via the nitrogen atom to an aliphatic tail of about C_{14} complexity.

During the 1940's, salts of this type were suggested for use in air fresheners,[93] particularly of the glycol variety, where they were said to enhance the germicidal and odor-combating properties of the basic formula. They were used in some of the earliest commercial products,[94] generally in amounts of from 0.03% to 0.15%. The use of concentrations above about 0.15% was shown to cause irritation of the mucous membranes in some instances.

When quaternaries are added to glycol formulations, compromises in the amount of co-solvent may be necessary. Additional amounts of ethanol or isopropanol must sometimes be put in, in order to keep the quaternary salts in solution. Their poor solubility characteristics at very low temperatures often cause trouble. The chilled solution should not be filtered, since—even though a portion of the salt may separate—it will usually remain suspended in the rather viscous glycol liquid until it can be filled into the aerosol container.

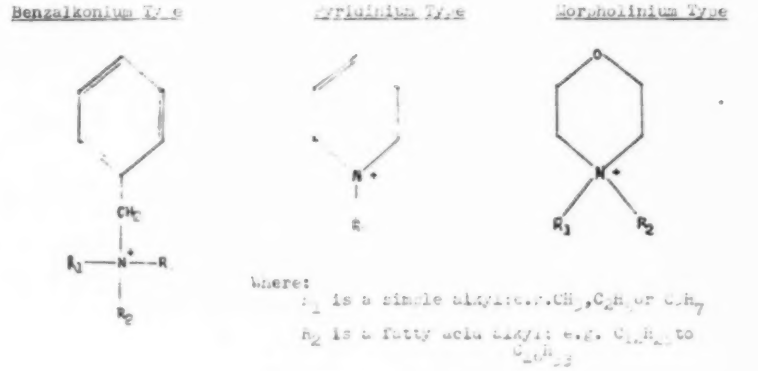
The quaternaries act as powerful corrosion inhibitors and are widely used for this purpose alone. When they are added to glycol formulas, the usual precautions against moisture and oxygen are no longer critical. In fact, at least two quaternary salts are used in the form of 50% water solutions, in order to avoid the premium prices commanded by the crystalline salts, which contain only 1% to 4% moisture.[95]

As with the glycols, the germicidal abilities of the "quats" have been questioned when they are dispersed into the air by aerosol methods. Only temporary air count bacteria reductions are said to take place, mainly because of air renewal, and partly because of absorption by substances carried by air-borne dust.[96] There is also a mass of epidemiological evidence that points to contact transmittal of diseases (not transmittal by air-borne means) as the primary cause of infection in the total environmental system.

Although the quaternaries have been claimed to possess deodorizing powers against a host of specific household odors,[93,119] the concentrations have never been clearly defined. In contrast to this work, other investigations indicate that commercial aerosols containing from 0.04% to 0.10% quaternary ammonium salt give only slight moderation of the odor of onion, fish and cabbage; and, in addition, introduce new odors which are characteristic of themselves.[30] Quite possibly these dissimilarities may be reconciled by a consideration of the differences in the concentration of germicide, odorant material, water vapor and dust particles in the air at the time these two test series were conducted. It does seem logical that the quaternaries would have to be unusually powerful and selective in order to have any real effect upon massive amounts of odorous material when used at rates equivalent to air concentrations of only 40 to 100 ppb.; (44 to 110 picograms per milliliter of air.)

The irritational effect of air-borne ammonium quaternaries was one of problems that caused a search for similar salts of a milder nature. Some degree of improvement was said to be made when the quaternary pyridinium salts were introduced.[97] They could be incorporated into glycol-based deodorants in amounts as high as 0.3% before irritation and compatibility factors become troublesome. This has enabled the pyridinium salts to find use in many formulations.[30,98]

In 1950 a new series of compounds, the quaternary morpholinium alkyl sulfates, were discovered to possess powerful deodorant properties, although they themselves were essentially odorless and non-irritating.[99] They were suggested for use in aerosol deodorants in concentrations up to 5%. Under these conditions powerful and specific co-solvents, such as the partial esters of simple polyhydric alcohols, must be used in order to make the salts compatible with the usual aerosol systems. The germicidal properties of the morpholinium compounds are described as comparable with those of the benzalkonium (ammonium-base) and pyridinium classes.[100] A comparison of these three classes can be gained from the following structures:


Benzalkonium Type
Pyridinium Type
Morpholinium Type
Where:
R_1 is a simple alkyl: i.e. CH_3, C_2H_5 or C_3H_7
R_2 is a fatty acid alkyl: e.g. $C_{12}H_{25}$ to $C_{18}H_{37}$

These three classes of quaternary compounds may be further compared by a study of the physical properties shown by representative members from each group. The table at top of page 57 provides this information:

The morpholinium salts are formed by reacting morpholine with a C_{12} to C_{18} alkyl halide to produce the N-alkyl compound, which is then converted into the final product by treatment with a simple dialkyl sulfate. From 1% to 3% is generally suggested as the optimum concentration in an aerosol system, along with 5% to 15% of special co-solvent.

When you count on Crown, you get more than a complete range of aerosol cans. Only Crown makes both seamless and fabricated types. You get the benefit of production facilities greatly expanded to give you faster, better service. And you get the advantage of Crown's unmatched pioneering leadership in the aerosol field.

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Property.	*Hyamine 10-X.*	*Hyamine 1622.*	*Hyamine 2389.*	*Hyamine 3500.*	*Emcol E-607.*	*Edison Deod't.*
Specific Gravity; 20° C.*	1.051	1.050	1.035	1.038	1.021	0.991
Refractive Index; 25° C.*	1.3810	1.3801	1.3572	1.3570	1.3735	1.3748
Color*	None	None	Straw	None	Amber	Orange
Boiling Point (or I.B.P.)	330° F.	334° F.	——	——	Dec.	510° F.
Melting Point	172° F.	184° F.	——	——	——	165° F.
Flash Point	390° F.	390° F.	126° F.	123° F.	370° F.	459° F.
Acid Value*	0.12	0.12	0.44	0.55	31.3	1.77
pH Value*	7.0	7.0	7.5	8.1	4.9	6.5
Viscosity; cps. 25° C.*	880	214	120	125	110	225
Moisture Content	3.32%	3.43%	——	——	——	——

* Determined using a 25% aqueous solution.

High solvency propellant blends, such as those containing Propellant-22 or Propellant-142, are also recommended.

Special methods must be used to prepare the morpholinium deodorants. The co-solvent is first heated to 160°F. so that the semi-solid or solid deodorant can be stirred in and dissolved. Following this, the mixture can be cooled to 90°F. and added to the aerosol container. The valve is sealed on and the propellants added by pressure loading techniques. Reodorants, such as peppermint oil, menthol, pine oil, clove oil and benzoin have been described as being compatible with the morpholinium salts, and it would thus appear that more balanced perfumes would also be admissible.

The mechanisms by which the quaternary morpholinium alkyl sulfates achieve their deodorizing action are not fully understood. It has been said that they chemically destroy the odors on which they act.[99] This reaction apparently follows an intriguing succession of events. Assisted by their anti-static properties, droplets of the deodorant easily absorb odorous materials from the air. Chemical fixation follows. This is most rapid with alkaline odors, such as the amines, because of the cationic and acidic nature of the morpholinium salts. The germicidal action of these compounds eliminates the possibility of recurrent odor generation through putrefaction and similiar mechanisms brought about by bacteria. Since the morpholinium salts can be used in concentrations on the order of a hundred times higher than other quaternaries, their effectiveness can be rationalized on this basis alone.

The only morpholinium compound presently in commercial production is N-Soya N-ethyl morpholineum ethosulfate, which is made and distributed by Thomas A. Edison Industries. This product, known as the "Edison Odorless-In-Use Deodorant," is produced as a 35% aqueous solution. The anhydrous form has been prepared on a pilot plant scale but indicates a sharply increased manufacturing cost, mainly because of viscosity problems and foaming tendencies.[116] It is alleged,[101] that the anhydrous base substance is not effective as a deodorant in the absence of water. In fact, for airborne sprays, maximum deodorizing effects are reached when the air contains over 300 parts of water vapor to one part of quaternary salt.[102]

Several formulations have been published for aerosol deodorants which contain quaternary salts. Three of them are presented as follows:

Ingredients.	XLI.	XLII.	XLIII.
Deodorant Perfume	2.0%	——	——
Triethylene Glycol	5.4%	——	——
N-(Lauryl-colaminoformyl-methyl)-pyridinium Chloride (Emcol E-607)	0.1%	——	——
N-Soya N-ethyl morpholinium ethosulfate (Edison Odorless-In-Use Deodorant)	——	1.0%	——
N-Lauryl N-methyl morpholinium methyl sulfate	——	——	1.5%
Propylene Glycol Monolaurate	——	9.0%	——
Propylene Glycol Monopalmitate	——	——	12.0%
Pine Oil	——	——	1.0%
Clove Oil	——	——	0.5%
Camphor	——	——	1.0%
Ethanol (Anhydrous)	7.5%	——	——
Propellant-11	42.5%	7.0%	——
Propellant-12	42.5%	14.0%	——
Propellant-22	——	——	42.0%
Propellant-142	——	69.0%	——
Propellant-152	——	——	42.0%
Propellant-12	——	——	42.0%
Reference	(33)	(99)	(99)
Year Published	1958	1951	1951

Since the formulations numbered XLII and XLIII are based upon morpholinium salts which are not in commercial production in the anhydrous state, and since they use propellant systems which are rather expensive and exotic in nature, much of their significance is lost. As for the Edison Odorless-In-Use Deodorant, certain distribution rights are said to be in effect and other negotiations for marketing participation are well advanced. The aerosol product currently sold under these conditions is reported to consist of a solution of the aqueous morpholinium concentrate in anhydrous ethanol, to which sufficient fluorocarbon propellant has been added so that the formulation is rendered non-flammable.[103]

In addition to formulation number XLI, formulas XXXVI and XXXVII are suggested for deodorants which use the benzalkonium or pyridinium quaternary salts; such as Hyamines 10-X, 1622, 2389 or 3500 by the Rohm & Haas Co., or Emcols E-607 & E-607-S by the Witco Chemical Co.

During recent years the versatility of the quaternary salts has permitted the introduction of a new type of institutional aerosol product: the "San-

(*Continued on Page* 127)

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By John J. Sciarra, Francis J. Tinney, and William J. Feely*
St. John's University, College of Pharmacy
Jamaica 32, N. Y.

the formulation of

Topical Pharmaceuticals in Aerosol Packages

UNTIL recently, ointments and ointment type products were packaged in glass, stoneware, porcelain, polyethylene, or plastic, wide-mouth jars. Since a large area of the ointment was exposed to the deleterious effects of air, those ointments containing easily oxidized medicinals were packaged in collapsible metal tubes. These containers did not take into account, to any large extent, such factors as ease of application, cleanliness, contamination from an infected area or with foreign materials, maintenance of sterility, oxidation, waste due to the method of application, and stability.

A possible solution to the choice of container may be found through the use of the aerosol principle. Since the aerosol container can be metallic, glass, or plastic, the use of such containers for ointments would yield the following advantages: (a) The method of application is convenient, fast and efficient; (b) since the medicinal is applied directly from the container to the affected area of the skin there is no waste or messiness through the use of an applicator or cotton swab; (c) there is no danger of contamination of the product since the aerosol container is completely sealed and only the amount used can be dispensed at any one time; at no time can the unused ointment preparation come in contact with foreign materials other than the container and valve components; (d) if the product is packaged under sterile conditions, then sterility is maintained throughout the life of the product; this is especially important when ophthalmic ointments are used; (e) the stability of such a dosage form is insured since the aerosol container is a completely sealed unit; this also prevents "drying out" of the product as well as protecting water sensitive drugs from absorbing moisture from the atmosphere (e.g., antibiotics); (f) liquefied gas aerosols will dry rapidly due to vaporization of propellant causing a cooling effect which may be desired in certain cases; (g) the irritation produced by the mechanical application of an ointment over an abraded area of the skin is reduced and sometimes eliminated by a "spray-on" aerosol; (h) the medication can be applied in an extremely thin layer directly over the affected area; this results in faster absorption and more efficient utilization of a given amount of medication.

Much has been written as to the general characteristics, classification, and types of ointment bases.[1,2] Ointment bases containing animal fats, vegetable oils or hydrocarbons such as petroleum jelly or liquid petrolatum are designated as oleaginous bases. A base consisting primarily of a mixture of animal sterols with petrolatum jelly is classified as an absorption base. Ointment bases which are prepared from the higher ethylene glycol polymers and are soft, waxy solids similar in consistency to petroleum jelly are known as the water soluble type. Washable ointment bases are generally of the o/w emulsion type product.

Based on their penetration, ointment bases have been placed into three classes; epidermic (petrolatum, waxes, and their combinations), endodermic (vegetable oils, lard, wool fat, lanolin, and their combinations), and diadermic (emulsion and water soluble bases).[3] Through choice of a proper base, penetration of the active ingredients from the ointment base can be controlled.[4,5]

Absorption of medicinals from ointment bases depends not only upon the nature of the base but also upon the nature and condition of the patient's skin. Little is known of the mechanism by which substances accomplish passage through normal skin. Such factors as thickness and texture of skin, and differences between one area of the body's skin or another must be considered. The highly compact layer of stratified squamous epithelium, a stratum of keratinized cells and the coating of a fairly water-proof sebum act as inhibitory agents to drug absorption. A preparation capable of removing this dead horny layer or mixing with the protective sebum will promote subsequent penetration.[6] Penetration may be increased over a localized area by friction, irritation, or occlusive dressings. The increased vascularity enhances absorption by removing the ab-

* Originally published in Vol. 28, No. 1 (Jan.-Feb., 1960) of *Drug Standards* (periodical of the American Pharmaceutical Association) and published here with permission of the authors and of the association.

sorbed drug, thereby maintaining a higher concentration gradient. Abrasion or breaks in the integument, as from dermatitis or trauma, favor entry of medicinals into the tissue fluids, although this is not true skin absorption. Fuller, Hawkins, and Partridge[7] state that the fundamental consideration in the absorption of substances from ointments is "the ratio of the surface of the preparation to its volume." If the surface is relatively large as in a thin film layer, the delay from oil preparations is small, as found when ointments are smeared over a large surface. In this connection it seems that an aerosol ointment preparation will coat a large area of the body with a very thin film of medication.

ALTHOUGH particle size is always important in ointment preparations, it is even more important when the ointment is to be applied to an irritated, diseased, or denuded skin. The smaller the particle size of the medicament, the less likely is the preparation to cause further irritation. Such a reduction in particle size can be accomplished by a liquefied gas aerosol ointment formulation in which the dispersion of particles from the actuator is within the range of 30-50 microns or less. With this reduction in both particle size and thickness of material to be applied to a given area, penetration of medication into the ducts of the skin can be accomplished without vigorous rubbing.

Pharmaceutically, ointments have been defined as soft, semisolid preparations usually containing medicaments and are intended to be applied externally to the body or to mucous membranes.[8] If the aerosol dosage form is adapted for the dispensing of this type of preparation, the definition will have to be slightly modified to include liquid preparations as well as semisolids.

An aerosol ointment preparation can be formulated utilizing a liquefied or a compressed gas. A compressed gas aerosol will dispense the ointment in its original form and of necessity must be semisolid in consistency. The chief advantage of this type of aerosol would be increased stability due to packaging in an atmosphere of inert gas as well as the advantages of being packaged in a sealed unit. This ointment will still have to be rubbed over the affected area, but is an improvement over existing containers for ointments. On the other hand if a liquefied gas is used as the propellant, a product may be formulated having decided advantages over the more usual type of ointments. This type of product would require reformulation as well as the choice of other than the usual ointment type bases and ingredients. However, once some of the basic factors involved in the formulation of an aerosol ointment are determined, it may be possible to formulate many medicinals into an aerosol type product which can then be used in addition to, or as a replacement for the usual type ointment products. Therefore, it is the purpose of this investigation to determine in a general way the feasibility of applying ointment products by the aerosol method.

TABLE I. — PETROLATUM AS A COMPRESSED GAS AEROSOL[a]

Composition of Base			
Petrolatum % W/W	Liquid Petrolatum % W/W	Physical Appearance	Dispensing Characteristics
0	100	limpid oily liquid	A
10	90	limpid oily liquid	A
20	80	limpid oily liquid	A
30	70	viscous oily liquid	A
40	60	viscous oily liquid	A
50	50	jelly like semi-solid	B
60	40	jelly like semi-solid	C
70	30	jelly like semi-solid	D
80	20	viscous semi-solid	E
90	10	viscous semi-solid	E
100	0	viscous semi-solid	F

[a]Nitrogen at 90 psig.

A — Too limpid, does not adhere to skin surface.
B — Flowed evenly, may be a little too limpid, does not adhere to skin surface.
C — Produced a product having most of the desired characteristics.
D — Could be dispensed, may be too viscous.
E — Could be dispensed, too viscous to be spread over skin surface.
F — Could not be dispensed.

TABLE II. — POLYETHYLENE GLYCOL AS A COMPRESSED GAS AEROSOL[a]

Composition of Base			
PEG 4000 % W/W	PEG 400 % W/W	Physical Appearance	Dispensing Characteristics
0	100	limpid liquid	A
5	95	viscous liquid	C
10	90	very viscous liquid	C
20	80	jelly like semi-solid	D
30	70	viscous semi-solid	D
40	60	very viscous semi-solid	F
50	50	very viscous semi-solid	F

[a]Nitrogen at 90 psig.

A — Too limpid, does not adhere to skin surface.
C — Produced a product having most of the desired characteristics.
D — Could be dispensed, may be too viscous.
F — Could not be dispensed.

Experimental

For the purpose of this investigation, two common type ointment bases were utilized. Mixtures of petrolatum, U.S.P., and liquid petrolatum, U.S.P., were used as an example of an oily type base, while mixtures of polyethylene glycol (PEG) 400, U.S.P., and polyethylene glycol (PEG) 4000, U.S.P., were used as an example of a water-miscible ointment base. By varying the proportions of liquid and solid

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TABLE III.—LIQUEFIED GAS AEROSOLS WITHOUT SURFACTANT

Composition of Base	% W/W	Composition of Propellant	% W/W	Physical Appearance	Spraying Characteristics
liquid petrolatum	90	propellant 12	20	thin opaque liquid; no separation on standing	produced a fine thin spray[a]
petrolatum	10	propellant 114	80	"	
liquid petrolatum	80	propellant 12	20	thin opaque liquid; no separation on standing	produced a fine thin spray[a]
petrolatum	20	propellant 114	80	"	
liquid petrolatum	70	propellant 12	20	thin opaque liquid; no separation on standing	produced a fine thin spray
petrolatum	30	propellant 114	80	"	
liquid petrolatum	60	propellant 12	20	viscous opaque liquid; no separation on standing	produced a fine thin spray
petrolatum	40	propellant 114	80	"	
liquid petrolatum	50	propellant 12	20	viscous opaque liquid; separated on standing	did not produce an acceptable spray
petrolatum	50	propellant 114	80		
PEG 400	100	propellant 12	20	thin opaque liquid; showed separation on standing	did not produce an acceptable spray
		propellant 114	80		
PEG 400	90	propellant 12	20	thin opaque liquid; showed separation on standing	did not produce an acceptable spray
PEG 4000	10	propellant 114	80		

[a]Variation of propellant concentration may yield proper spray.

component a series of ointment bases were obtained varying in consistency from a limpid liquid to a wax-like solid.

Concentrations of 0% to 100% by weight in increments of 10% of liquid petrolatum were mixed with petrolatum to form the ointment base. Similar mixtures were prepared utilizing PEG 400 mixed with PEG 4000. The physical appearance of the petrolatum base varied from an oily liquid (100% liquid petrolatum) to a thick semi-solid (100% petrolatum), while the PEG base varied from a thin liquid (100% PEG 400) to a soft semi-solid (50% PEG 400 and 50% PEG 4000). Lower concentrations of the liquid component of the PEG ointment base resulted in a thick semi-solid to a wax-like solid which could not be dispensed from an aerosol container.

Formulation of Compressed Gas Aerosols

Nitrogen was used as the compressed gas for all of the aerosols in this group. Sixty grams of each ointment base was placed in a two-ounce aerosol metal container and sealed with a nitrogen type aerosol valve. Nitrogen was added to the container until a pressure of 90 lb./sq. in. gauge (psig), at ambient room temperature, was attained. After testing the container and valve for leaks and strength of container at 130°F. (54°C.), the valve of each container was depressed and the dispensing characteristics of each ointment base were noted. The results are shown in Tables I and II.

Formulation of Liquefied Gas Aerosols

Propellants 11, 12, and 114 were utilized in this portion of the investigation. Thirty grams of each ointment base was placed in a two-ounce plastic coated, glass container. The container was then sealed with a spray type aerosol valve. Twenty-five grams of propellant mixture was added to each container by the pressure filling method.[9] Two series of products were evaluated, one series consisting of ointment base and propellant and the other series consisting of ointment base, propellant, and a surfactant. Several surfactants were utilized for this purpose in concentrations of 5 and 10%. The ratio of each propellant in the propellant mixtures, the surfactants and concentration of each used, and the dispensing characteristics of each aerosol formulation are shown in Tables III and IV.

Discussion

The formulation of a suitable, compressed gas type aerosol for topical administration does not appear to present much of a problem. The viscosity of the product should be controlled within minimum and maximum limits. Liquids of low viscosity can be dispensed from such an aerosol container, but would not adhere to the surface of the affected area to which they were applied. On the other hand, products of high viscosity can not be dispensed from such a container due to their physical state.

This investigation indicates that a water-soluble ointment base consisting of about 90% PEG 400 and 10% PEG 4000 and an oily type base consisting of about 40% liquid petrolatum and 60% petrolatum produce compressed gas aerosols having all of the desired properties. These

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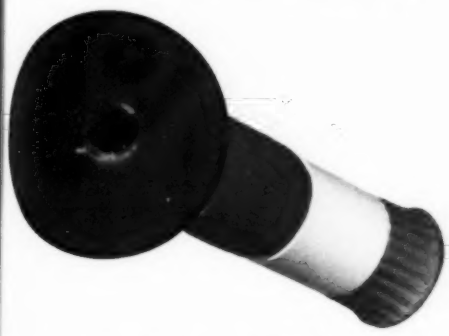

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TABLE IV.—LIQUEFIED GAS AEROSOLS WITH SURFACTANT

Composition of Base	% W/W	Surfactant	% W/W	Physical Appearance	Spraying Characteristics
liquid petrolatum petrolatum	70 30	Tween 20[a]	10	opaque liquid; little separation on standing	gave a fine spray
liquid petrolatum petrolatum	70 30	Tween 80[b]	10	opaque liquid; little separation on standing	gave a fine spray
liquid petrolatum petrolatum	65 35	Tween 20	5	opaque liquid; no separation on standing	gave a fine spray[f]
liquid petrolatum petrolatum	65 35	Tween 80	10	opaque liquid; no separation on standing	gave a foam type spray
liquid petrolatum petrolatum	60 40	Tween 20	10	opaque liquid; no separation on standing	gave a foam type spray
liquid petrolatum petrolatum	65 35	Span 80[c]	5	opaque liquid; no separation on standing	gave a foam type spray
liquid petrolatum petrolatum	70 30	Miranol MSA[d] modified	5	opaque liquid; no separation on standing	gave a foam type spray
liquid petrolatum petrolatum	80 20	Arlacel 165[e]	10	white viscous liquid; no separation on standing	gave a foam type spray
PEG 400 PEG 4000	90 10	Tween 20	10	white viscous liquid; separated on standing	gave a foam type spray
PEG 400 PEG 4000	90 10	Arlacel 165	10	white viscous liquid; separated on standing	gave a foam type spray

[a]Polyoxyethylene sorbitan monolaurate; Atlas Powder Co., Wilmington, Delaware.
[b]Polyoxyethylene sorbitan monooleate; Atlas Powder Co., Wilmington, Delaware.
[c]Sorbitan monooleate; Atlas Powder Co., Wilmington, Delaware.
[d]Miranol Chemical Co., Irvington, N. J.
[e]Glycerol monostearate; Atlas Powder Co., Wilmington, Delaware.
[f]Propellant consisted of 50% W/W Propellant 11 and 50% W/W Propellant 12.

bases have a viscosity of about 36,000 and 25,500 cps*, respectively, but it should be pointed out that this viscosity is reported only as an indication of the relative thickness of the product and should not be interpreted as an absolute value. Mina has discussed the importance of viscosity in a recent publication (10).

Since in a compressed gas aerosol containing nitrogen there is little or no mixing of the gas with active ingredient, the product is dispensed as a stream of liquid or semi-solid similar to the aerosol or pressure packed toothpastes and vitamin preparations.

The formulation of a suitable liquefied gas aerosol presented a greater problem than the compressed gas aerosol. The liquefied gas and either the petrolatum or polyethylene glycol base are essentially nonmiscible. Most of the products in this group showed some separation of ingredients over a relatively short period of time. As can be seen from Table III, several aerosol products were formulated and show promise of yielding satisfactory aerosols. A fine spray was produced, forming a thin film of ingredients over the affected area. This film adhered to the skin and is believed to be useful as a vehicle for medicinal agents as well as a protective.

The addition of a surfactant to the propellant-base mixture increased the stability of most of the products as far as separation of ingredients is concerned. These aerosol products when sprayed onto the skin produced a foam type spray. The foam quickly collapsed, releasing the base in its original form. It is believed that this is an ideal method for the administration of medicinal ingredients over a large area. No spreading or rubbing is required in order to bring the base and medicinal agents in contact with the affected area. Table IV shows the composition of some of these products. These formulations will require additional modification since they represent only basic formulas. No attempt was made at this time to alter the propellant concentration in order to produce different types of sprays and foams. Additional studies are necessary, since the intent during this investigation has been only to cover a broad area in order to determine the usefulness of applying aerosol principles to ointment formulation. The results indicate that the aerosol method for applying topical medication is feasible and should be further investigated.

Summary

1. Several ointment bases were investigated in order to determine the feasibility of dispensing ointment type preparations by the use of a compressed gas or liquefied gas.

2. The bases investigated consisted of various proportions of liquid petrolatum and petrolatum; and PEG 400 and PEG 4000.

3. In order to increase the miscibility of the liquefied gas with the ointment base ingredients, a surfac-

(*Continued on Page* 129)

* As determined using a Brookfield, Synchro-Lectric Viscometer, LVF-4 model, #4 spindle, 6 r.p.m., at 25°C.

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At left: Don Schary, production manager, checks new filling line. At right, inside explosion-proof room, valves are inserted prior to gassing operation.

Par Installs New Line

By Edward Meier,
Aerosol Age West Coast Correspondent

A NEW aerosol filling line with a capacity to package more than 750,000 units per month has gone into production at Par Industries, pioneer Los Angeles custom aerosol filler. In addition, this spring Par purchased the complete aerosol filling equipment of a San Diego loader, and this new machinery has been integrated into Par's main plant in Los Angeles.

Assurance that the West is fast becoming an important factor in aerosol packaging is well illustrated in this large expansion by a seasoned West Coast custom filler. Products currently rolling off Par's assembly line run the gamut of nearly every type aerosol now on the market . . . insecticides, paints, hair sprays, shoe polish, space deodorants, shave foams, waxes, shark repellents, detergents, etc.

Filling machinery for the new line was built by Gerald Foster, plant engineer, and is of the latest design. Included is a separate conveyor system from a new explosion-proof room to main building where can testing, labeling, packing and shipping are done. One person can supervise the entire operation, since much of the system is automatic.

Unusual safety precautions were taken by Par to meet the strict requirements of state and local laws governing the storage and handling of propellants. Storage tanks are located 50 feet away from the filling machinery, and all fittings on piping and tanks are rated at 3,000 psi. Other special features include: automatic safety valves, spark-proof floors and an extra blower system for evacuation of air. Also, a supplemental carbon dioxide system has been installed for fire protection.

The entire new facility, except the storage tanks, is housed in a separate building *outside* the main plant where Par fills aerosol containers with such gases as the fluorinated hydrocarbons commonly used in pressure containers.

PAR'S move to gear itself to the future needs of aerosol markets on the West Coast came as a result of an analysis of the potential market in that area by Sylvan Lefcoe, president of the company. His background includes much experience in the embryo days of aerosols, and years ago, while president of a household chemical distributing firm, he saw the possibilities of pressure cans and was one of the first on the West Coast to package chemical specialties, paints, insecticides and room deodorants in aerosol cans. His early training was in law, and he practiced as an attorney in Philadelphia. He began his career with Par Industries in 1952 as secretary-treasurer and became president in 1954.

Mr. Lefcoe is a graduate of Girard College, Wharton School of Finance and Commerce of the University of Pennsylvania, and the Temple University Law School. At law school he was chancellor of the Honor Society, president of the Law Academy

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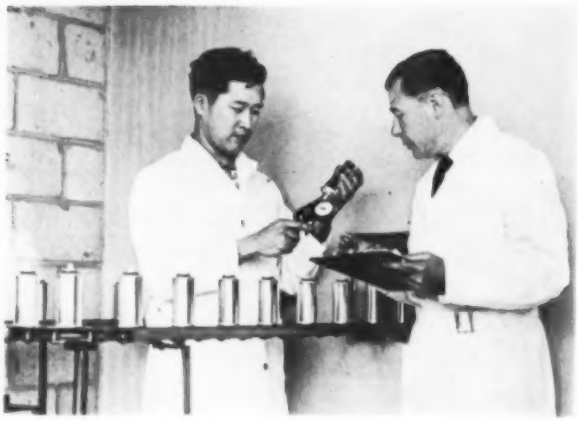

Sylvan Lefcoe, Par president (right) makes a spot check of quality control on the new line with Walter Lim, technical director, who has since left the company to help organize another filling firm.

of Philadelphia, and case editor of the *Law Quarterly*. He became an attorney for the Revenue Department of Pennsylvania, remaining in that position until 1935.

Other key personnel at Par include: Don Schary, production manager; Gerald Foster, chief engineer, and Walter Lim, technical director. As do a number of leading fillers, Par offers a complete customer service to companies interested in marketing aerosol products. Par's laboratory is especially equipped to handle formulation problems, and the staff collaborates on selection of proper containers, valves, labeling techniques and similar important production considerations.

"It is sound economics to fill aerosols in the West," Mr. Lefcoe declares. Queried more closely about this, he points out: "Facilities are now available to handle all prospective business. All major suppliers of propellant quote prices that are identical in all parts of the country. A similar situation exists for containers. Cans of many sizes are being delivered in the West at substantially the same prices as in the East.

"Valves are on a delivered price basis throughout the country. The industry owes a great deal of thanks to these suppliers for the foresight they had in beginning the trend toward equal prices in spite of the added cost they had to assume in shipping to the West.

"Corrugated cartons are purchased on the West Coast at prices comparable with those quoted in the East. In fact, on certain items, costs slightly favor the West. Many chemical concentrates can be purchased in the Los Angeles area at substantially the same prices as in the East. Solvents are in good supply and are about the same in price. Where any volume is indicated, arrangements are always made to provide adequate supplies from these stocks. Perfumes are in good supply, both of local origin and those supplied from other territories."

He points out further that his company can arrange to have other fillers warehouse and drop-ship finished goods. "Major markets in the West that can be supplied from the Los Angeles area include: San Francisco, Portland, Seattle, Denver, Salt Lake City and Dallas. Many distributors of aerosols maintain warehouses in one or a number of these key spots. The freight to these cities from Los Angeles is, in many cases, *much less* than that from the East or Midwest."

Mr. Lefcoe established contact with many aerosol loaders in Europe last fall during a six-week trip to seven countries. He believes that agreements signed between Par and foreign aerosol fillers will work to benefit consumers and the industry in both Europe and America. "Unique containers of aluminum and uncoated glass seen in Europe were unmistakable signs that we have something to learn from European manufacturers," he points out. Par Industries and Old Empire (Newark, N. J.) recently introduced a chic uncoated glass perfume bottle to aerosol cosmetic marketers. This type of container, used in Europe for more than a year, has rarely been seen in the U.S. Various modifications of the convoluted-sides design and metal overcap are expected to interest the pharmaceutical aerosol packagers as well as perfume marketers.

The new products department of Par recently introduced a "first" . . . an effective aerosol dish-washing detergent. A special formula shoe polish was developed at the laboratory; also a new paint product, yet to be marketed, which is said to provide a multi-color enamel resistant to water and cleaning compounds. It is the company's feeling that the lifeblood of the aerosol industry (as may be true of the chemical industry and others) is a continuing stream of new, well-tested, useful products to stimulate the interest and give better living and working to the consumer.★

Revlon Announces Proposed Stock Sale

Revlon, Inc., New York, major cosmetics marketer, last month registered a proposed 130,000-share secondary stock offering with the Securities and Exchange Commission in New York. Owned by Charles Revson, president, and Charles R. Lachman, senior vice president and technical director, the stock has an estimated market value of about $7.6 million.

In a statement explaining the sale, Mr. Revson said the transaction won't affect control of the company, since a voting trust, of which he is trustee, still will hold more than 41% of the voting stock. Mr. Revson pointed out: "Mr. Lachman and I own a substantial block of stock and will continue to do so after the proposed sale. We presently own, directly or indirectly, 1,235,760 shares out of 2,602,630 shares of both classes of stock outstanding. Ownership of the shares to be sold is divided equally between us." He said there were no plans to sell additional shares, and said the proceeds of the sale "will be used to improve our degree of personal liquidity and thus place us in a position to put our respective estates in order."

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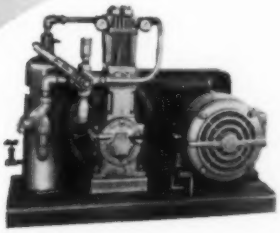

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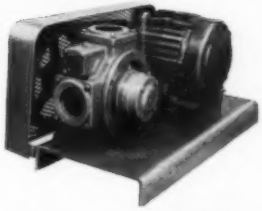
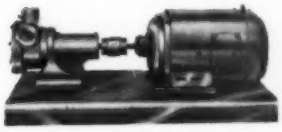


MODEL 1021-103

A CORKEN CORO-VANE TRANSFERS LIQUIDS FAST



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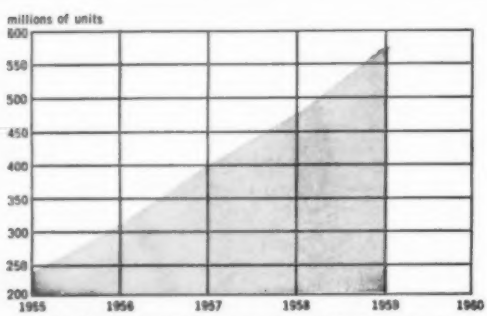

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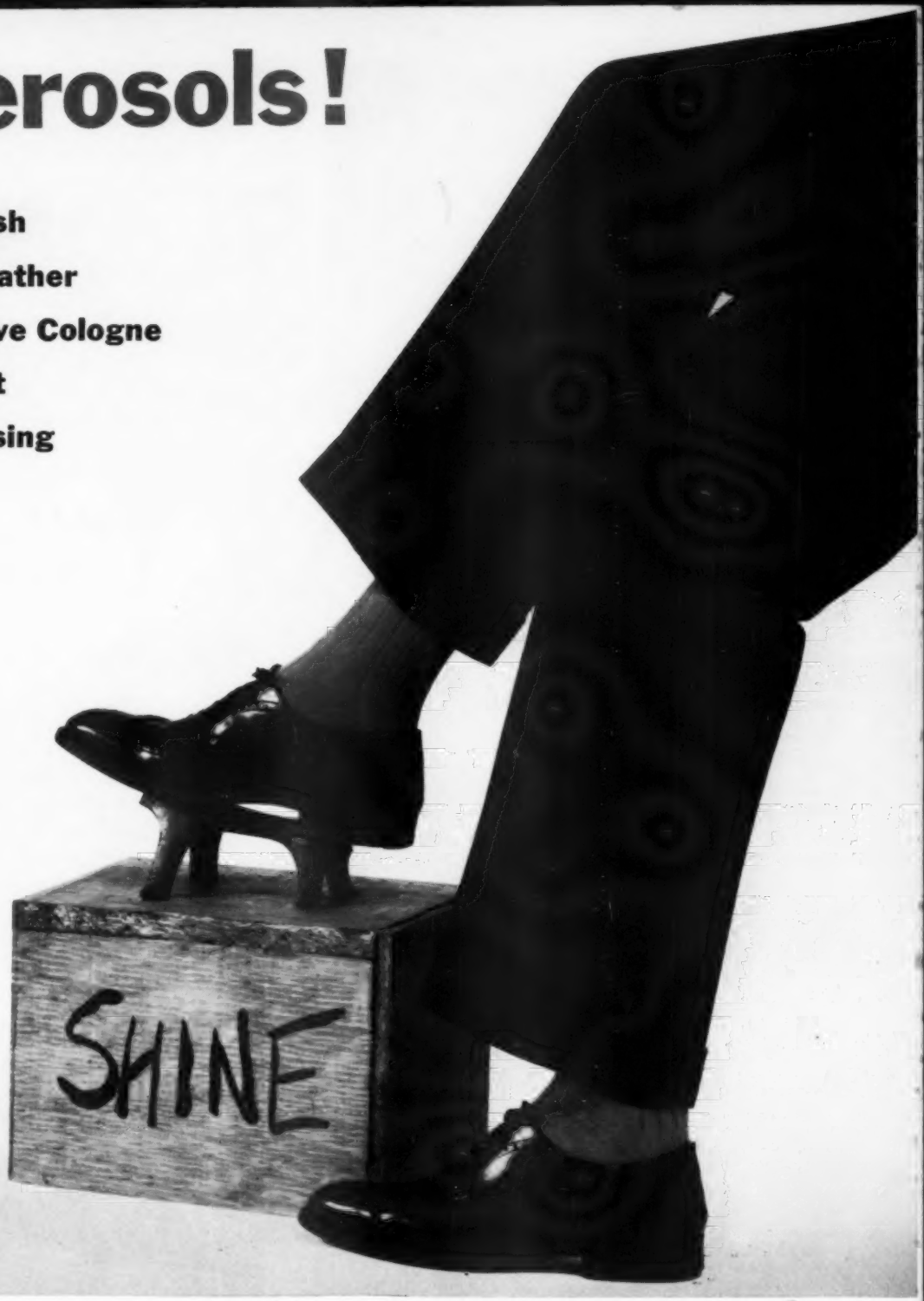

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nical data, latest market information and promising new aerosol formulations developed in its laboratories. In addition, General can help you select a contract filler who will take over the complete packaging job from preliminary tests to full-scale commercial production.

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*Estimated by Market Surveys Department, General Chemical Division, Allied Chemical Corporation

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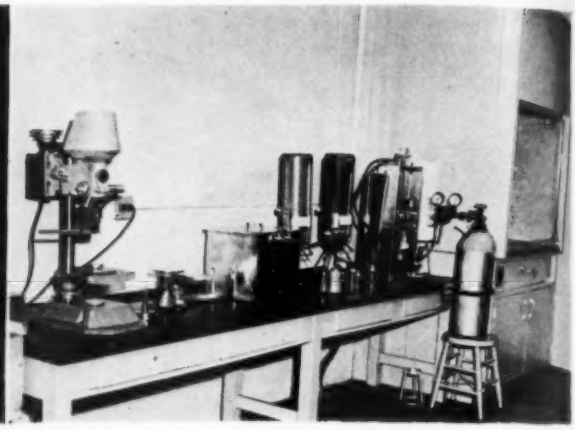


Participating in the opening seminar were (from left): Edmund Bennett, Walter Beard, Theodore Dunne, F. A. Mina, Victor DiGiacomo, Dr. Roy A. Bowers (dean of the College of Pharmacy), and Anthony Iannacone. At right is a photograph of some of the equipment in the laboratory.

Rutgers University Unveils New Aerosol Laboratory

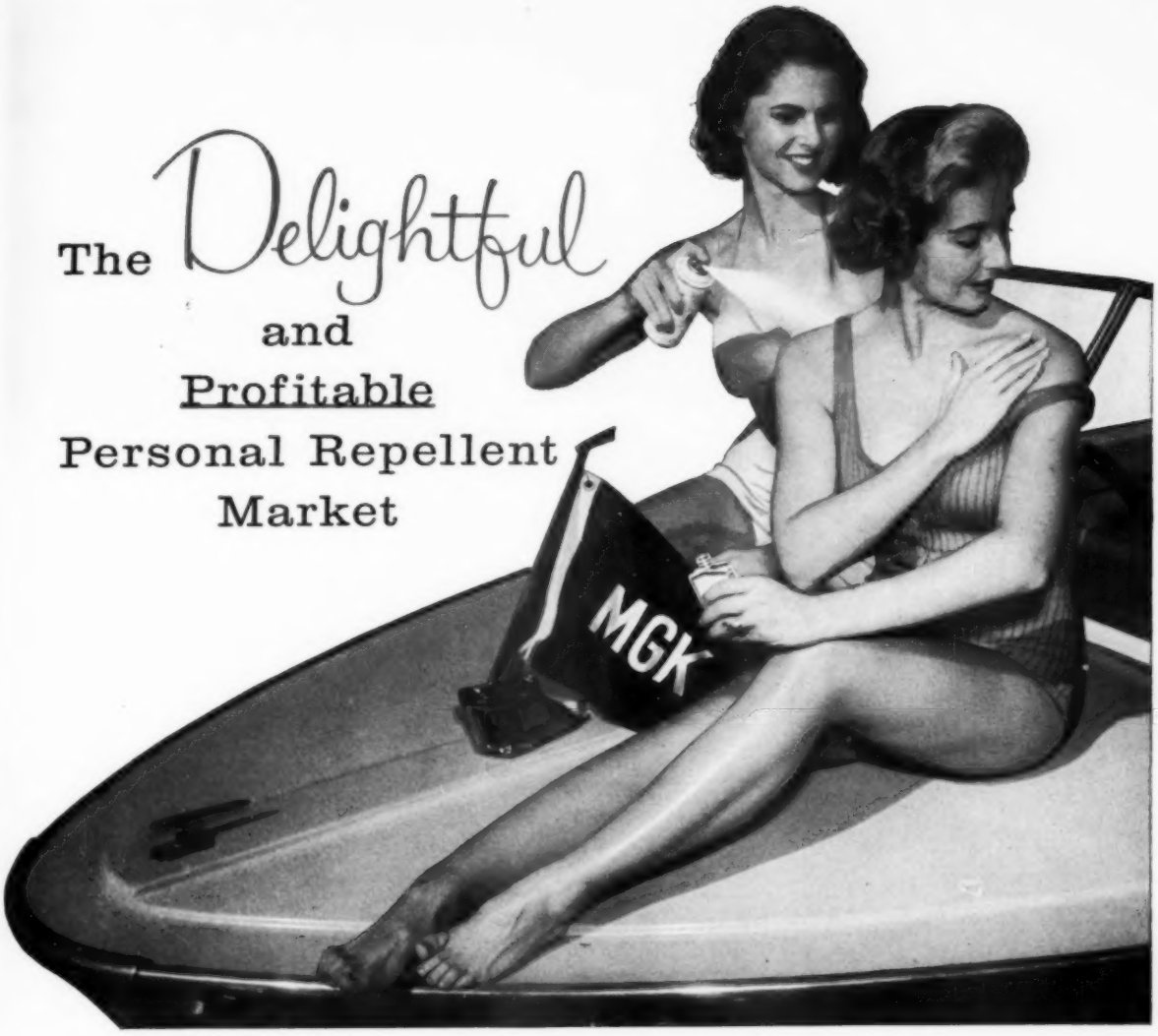
A BRIGHT outlook for aerosol-packaged pharmaceuticals was forecast at a special symposium held Nov. 17 to mark the opening of the Aerosol research laboratory at Rutgers University's College of Pharmacy in Newark, N. J. Attended by about 50 pharmaceutical and cosmetic chemists, the symposium speakers included Dr. Francis Mina, clinical research associate, Reed & Carnrick, Theodore F. Dunne, technical service representative of General Chemical Div., Victor DiGiacomo, administrator of perfume laboratories, Givaudan-Delawanna, Inc., and Walter C. Beard, Jr., research director, Risdon Manufacturing Co.

The new laboratory was made possible by a gift of equipment from Edmund Bennett, president of Fluid Chemical Co., Newark, and includes laboratory filling, crimping, and testing equipment, as well as sterile products rooms. It will be under the direction of Dr. Louis D. King, assistant dean and chairman of the Pharmacy Department, and will be used for instruction and graduate student and faculty research in aerosols.

At the symposium, which described some of the basics of pressure-packaged pharmaceuticals, Anthony Iannacone, technical director of Fluid Chemicals, acted as moderator.★

Anthony Iannacone, of Fluid Chemical, demonstrates some of the equipment to Donald Davis, *Aerosol Age* editor, and Dr. Roy Bowers, dean of the College of Pharmacy at Rutgers University.

The Delightful and Profitable Personal Repellent Market



As the outdoor recreational activities of boating, golfing, fishing, camping, and all the others, continue to grow at a fantastic rate, so does the market for personal repellents grow. It's a delightful and profitable market because it adds to out-of-doors comfort.

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The Filler Speaks:

(second of a series)

Jack Ellis Blasts Price Cutting as Harmful, Immature

sees paint field as bright one for custom filler

JOHN G. ELLIS, President and Founder of Sprayon Products, Inc., Cleveland, is one of the pioneers in the aerosol custom loading field. He began operations in 1949 and is credited with the development of aerosol paint formulations for many large paint marketers. His company's efforts are credited with the adaptation of aerosol containers to the special touch-up requirements of the original equipment manufacturer.

Mr. Ellis is the author of several articles on "Aerosol Pigmented Finishes," and a frequent lecturer on topics of importance to the pressure packaging field.

Q. *What is the role of the private label filler in the aerosol field?*

A. I feel we should make a careful distinction here, and specify the role of the *experienced* private label filler. By experienced, I mean one who has had no less than eight years of successful multi-product operation. Only with such a broad and seasoned background, can the custom loader give the marketer all the counsel and guidance he deserves—counsel and guidance not only in the technical aspects of the product, but in the marketing, pricing, and promotion.

The second important role is that the private label house, having the know-how, equipment, stocks of compnents, and trained staff, should be able to perform a more efficient job, faster, less expensively, and more uniformly than the average marketer. The small marketer should not be burdened with the physical aspects of making the product. The successful marketing of the new product is enough of a challenge in itself.

The large national marketer with ample funds, trained personnel, and an established aerosol line, will usually install his own loading facilities. But here, the role of the private label filler is one of helping the marketer prove the acceptance of the new product.

Q. *How can the aerosol filler increase business within the framework of his present operation?*

A. Of course, the standard methods — hard work, creative selling, quality, and service — must all be present. Beyond that I'm tempted to say, "Does Macy's tell Gimbels?" But seriously, we have found certain extra services effective. We try to give full customer service by keeping our accounts fully abreast of new product potentialities, volunteering marketing aids, and cooperating with their merchandising promotions. Our company takes pains to keep alert to newer methods that reduce costs and then pass the savings on to the marketer. Over the years we have strived to nurture our reputation of integrity, since we feel that an aerosol filler must offer a corporate image of integrity and customer service if he is to survive in the matured aerosol industry to come.

Q. *How is the practice of "price cutting" that is prevalent in many areas, affecting the custom aerosol loader?*

A. It is hurting the custom loader as it is hurting every phase of American Industry where it exists. The few pennies of profit that the custom loader enjoyed in former years have now become mills.

The necessary customer education and promotion that must go into a new aerosol product to make it successful cost money. And as profits lower, less money is available to increase sales through promotion. It becomes a vicious circle, and the whole industry suffers. Though the answer is complex, we all hope that the industry will become stabilized,

(*Continued on Page* 124)

Ing. Ravenna (left) shows the range of valves his company will sell to Dr. Enrique Rusconi, managing director of Sintaryc, Argentine filler.

Argentine Industry Said to be Slowed by High Propellant Cost

HIGH prices for propellants, coupled with an 82% import duty on aerosol valves, have somewhat slowed any rapid development of the Argentine aerosol market. This was the opinion expressed to *Aerosol Age* last month by Ing. Jorge H. Ravenna, of Aeraton Srl., Buenos Aires, new Risdon valve licensee for Argentina, who visited the United States to confer with Risdon executives and to see propellant manufacturers. He also conferred with officials of Pegasus International Corp., New York, which manages Risdon's licensees overseas.

Occasion of Sr. Ravenna's interview was the announcement of Risdon that Aeraton will begin production of valves sometime next year. In the meantime the new company will import the complete valve from Naugatuck, Conn. until it begins to make some of the parts by the Spring of 1961. Within six months, Sr. Ravenna estimated, Aeraton will be making 50% of the valve parts.

Sr. Ravenna reported that all aerosol valves currently used in Argentina are being exported either from the United States or Europe. He said that this year something in the vicinity of one million aerosol units will be sold in Argentina, but that the advent of a number of major new marketers into aerosol packaging could be expected to stimulate the whole market next year.

Returning to the subject of high propellant prices, Sr. Ravenna told *Aerosol Age* that the price of fluorinated hydrocarbon propellants (only 11 and 12 are available now) is currently about $1.30 a pound—or nearly *three times* the U.S. price. He said this important factor had accounted for the current market picture (so far as "best-selling" product types is concerned) and, because the Argentine wages are about one-third less than those in the U.S., has been a significant factor in slowing down market expansion.

"For instance," Sr. Ravenna pointed out, "contrary to what happened in the U.S. and Europe, where insecticides became the prime impetus in getting the consumer interested in the aerosol idea, in Argentina per-unit prices have not made the aerosol insecticide really competitive with sprayers and other conventional means of dispensing. Instead, hair sprays and similar products, which *could* absorb the propellant costs, have been the major product type almost from the beginning.

"Of course, there have been other factors. The import duty has made the valve about twice the price at which it is available in country of manufacture. Containers, now in good supply from Argentine firms (tinplate from Liubicht & Hijos Srl. and aluminum extruded units from Extrusion, S.A.) are approximately twice the price of similar units in the U.S. Filling prices, however, have generally been about equal to those in the U.S. or in Europe. But these factors, combined with the propellant prices, have brought the consumer price of a six-ounce hair spray to the equivalent of $1.50. But even this figure is not one for valid comparison with American prices—because a female secretary in Argentina, because of lower wages, must pay about three times what her American counterpart will pay for the equivalent product."

QUERIED about other leading product types, Sr. Ravenna listed suntan oils, room deodorants, glass cleaners, paints, and shaving creams. He reported that pharmaceuticals are becoming increasingly important (though pressurized foods are nonexistent) and that insecticides are beginning to move slowly despite their price.

Sr. Ravenna suggested that the slow growth of the market has reduced the number of custom fillers in Argentina from about seven in

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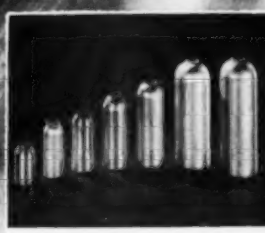

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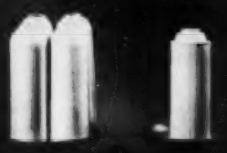

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1958 to two today. These he listed as Sintaryc Ind. y Comm. Srl. and SAFCA affiliates in Britain, Italy, and Spain. Of these two companies, Sintaryc has been the prime importer of American-made valves, mainl because SAFCA uses exclusive SAFCA-made aerosol valves from France. Both these companies, he said, have constructed their own filling equipment, test tanks, etc., though some U.S.-made equipment was imported into the country several years ago.

Though the "Zippo" aerosol brand-name (the name used by Redy S.A., Buenos Aires) is currently probably the best known, Sr. Ravenna reported that some of the major U.S. and European firms are becoming interested in the Argentine consumer market. Lever Bros., Shulton, Helena Rubinstein, and Shell are just a few which either have already marketed in that country, or have plans to do so. Lubin's "Gin Fizz," a French product, is currently the only cologne product on the Argentine market, mainly because the importation of aerosol containers (either coated or uncoated) is forbidden as a concession to the Argentine glass industry.

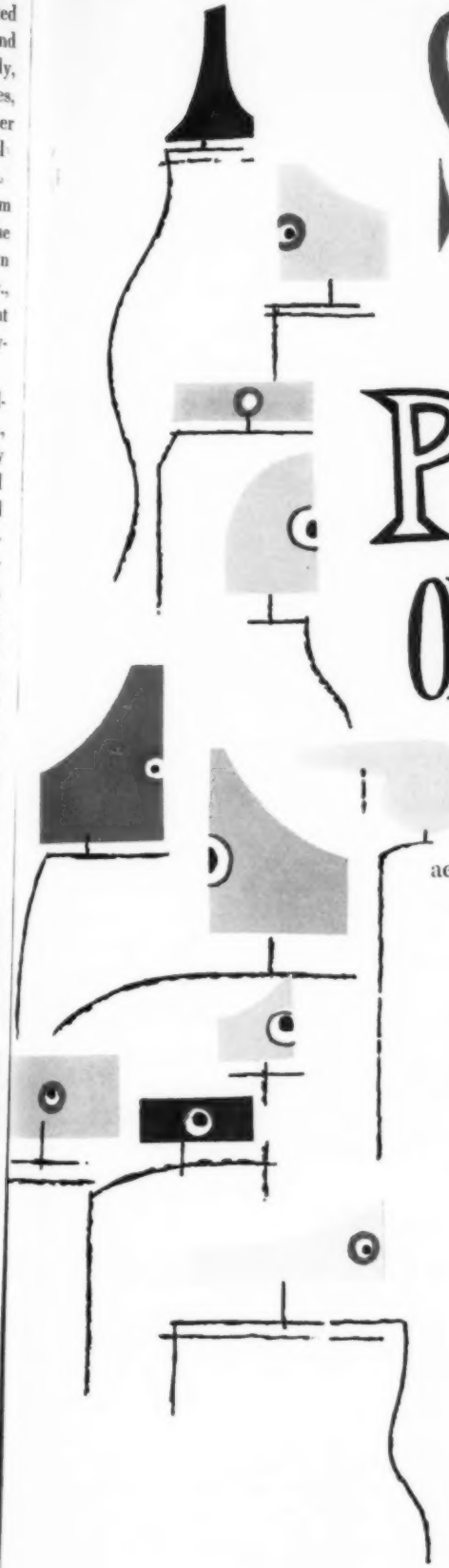
One peculiar fact noted by Sr. Ravenna is that both aluminum and tinplate containers are delivered to the filler with neither exterior lithography or interior coating. This legislates that all labels will be paper, and that the filler must take on the interior coating and outside painting as an additional service to the customer.

He reported that marketing practices are similar to those in the U.S., except that food stores carry *no* aerosols. Most of the cosmetics and a good many household products are sold in drug stores, but there is also a large volume sold through hardware and department stores.

What about the future of the Argentine aerosol industry? Can the market be expected to increase in the near future?

Naturally optimistic about the effect the production of domestically-manufactured aerosol valves will

(*Continued on Page* 115)



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New Consumer Survey Reveals Big Untapped Aerosol Paint Market

RELATIVELY high consumer acceptance of aerosol paints, coupled with a huge untapped potential market, may logically be expected to push the aerosol paint market up sharply during the next eight or nine years. This prediction is made in a new survey, titled "1960 Survey of Consumer's Knowledge, Use, and Opinion of Aerosol Paints," just published by the "Freon Products Division of E. I. du Pont de Nemours & Co., Wilmington 98, Del.

The survey was the result of answers to a screening questionnaire sent to 20,000 families included in a panel maintained by National Family Opinion, Inc., Toledo, O. The panel is designed to conform closely with U.S. Census Bureau statistics on income, size of place of residence, age of female head, and geographic location. The aerosol paint survey, completed on Dec. 15, 1959, made use of 16,955 completed questionnaires. Of this group, 2,216 respondants said they had used an aerosol paint during the previous six months, and 82% of the users of aerosol paints expressed the opinion that pressurized paint products did a good job.

Eight of the 35 specific questions in the survey revealed the following answers:

1. *Who is buying aerosol paints?*
   - 47% husband
   - 34 homemaker (primarily, the wife)
   - 12 other family member
   - 6 someone else
   - 1 no answer

2. *Where was the aerosol paint (last used) purchased?*
   - 38% hardware
   - 21 paint
   - 12 department
   - 6 auto accessory
   - 4 5 & 10 variety
   - 25 other types
   - 1 don't know
   - 1 no answer

3. *Who are the users?*
   - 51% husband
   - 39 homemaker
   - 10 others

4. *Where are the users?*

	nat. profile	*aerosol users*
West	14%	19%
Central	30	30
South	31	25
East	25	26

5. *Colors Used?*
   - 23% white
   - 13 black
   - 12 gold
   - 9 red
   - 7 green
   - 6 blue
   - 5 silver
   - 4 aluminum
   - 4 copper
   - 3 grey
   - 3 clear
   - 3 pink
   - 2 yellow
   - 5 28 other colors
   - 1 no answer

6. *Do you feel aerosols do a good or a poor job?*
   - 82% good job
   - 9 poor job
   - 6 good and poor job
   - 2 not specified
   - 1 fair job

7. *Have you ever tried an aerosol paint?*
   - 72% no
   - 27% yes

8. *How does it happen you have never tried an aerosol paint?*
   - 14% too expensive
   - 8 haven't had the opportunity to use it
   - 7 messy and wasteful
   - 6 nothing needs to be painted
   - 5 haven't done much or any painting
   - 4 have plenty of brushes and rollers on hand
   - 34 30 other reasons
   - 12 never heard of it
   - 7 no particular reason
   - 6 no answer

Perhaps just as important to aerosol marketers as the statistical data presented are some of the conclusions offered by the authors:

"The existing market is a broad one, and there is widespread use of the product in all geographic regions, in all sizes of cities and towns, and by all types of families. The existing market is also a selective one in some respects, since the users tend to be in the upper income families. There are relatively fewer users in the South and in rural areas and more in the West.

". . . A relatively few articles account for most of the aerosol painting. Aerosols are creating new uses of their own: messy jobs (wicker furniture) hard-to-get-at objects (radiators), small objects (toys), difficult matching jobs (touch-up on automobiles, refrigerators) and others.

". . . The household market represents a large sales opportunity. About half of the families in the country had used a brush or roller within the six months previous to the survey. Aerosol users infer that these jobs could have been done more conveniently, quickly, and sometimes better with a can of spray paint. Over half of those who hadn't painted recently said that it was needed. Almost two-thirds of the nation's families had never tried an aerosol paint, and most of them had no apparent good reason. Almost all of those who had tried aerosol paints sometime in the past said they would be likely to use them again. Only 13% of the families had used an aerosol paint within the six months previous to the survey."

(*Continued on Page* 124)

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HAIR SPRAYS... Your customers spray hair with great ease and pinpoint accuracy for even application. Ideal for beauty parlors.
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AEROSOLS in review

A summary of aerosol articles in other publications

"Aerosol Documentary" is Feature of Trade Magazine

SOME excellent aerosol technical articles in the form of an "Aerosol Documentary," are the feature of the October issue of *American Perfumer*. Although a number of the papers published have appeared in this and other publications, there are informative articles on "The Toxicity of Propellants" (by Fred T. Reed of DuPont), "Hair Sprays —Past, Present, and Future" (by Morris J. Root of G. Barr & Co.), "Powder Aerosols" (by Victor DiGiacomo of Givaudan-Delawanna Corp.), "Methods of Dispensing Aerosol Flavoring Preparations" (by Philip Meshberg of Emson Research Inc.), "Inhibition of Metallic Corrosion in Aerosols" (by Kenneth Klausner of the General Chemical Division of Allied Chemical Corp.), "Aerosol Containers, by Jack Pickthall (of Polak & Schwarz [England] Ltd.), "Medicinal and Pharmaceutical Aerosols" (by Dr. John J. Sciarra of St. John's University), "Aerosol Cleaning Aids" (by Jean W. Baer, industrial consultant), "Setting Up an Aerosol Laboratory" (by William Scheck of Builders Sheet Metal Works, Inc.), "Cold versus Hot Fill Process" (by Robert A. Foresman Jr., aerosol consultant), "Solubility of Aromatic Substances" (by Vincent DeFeo of Dodge & Olcott, Inc.), "Quick Breaking Aerosol Foams" (by Thomas A. Wallace, Jr. of General Chemical), and "Aerosol Valves" (by Alfred Herzka, Pressurized Packaging Consultants Ltd.).

Mr. Reed has this to say about the decomposition of fluorinated hydrocarbon propellants in open flame: "The main products of thermal decomposition from the halogenated propellants are halogen acids, carbon dioxide, and traces of phosgene. Phosgene is quickly hydrolyzed to carbon dioxide and hydrochloric acid. The literature indicates that the toxicity of phosgene and the halogen acids are essentially equivalent. Phosgene, probably because it was used as a war gas, has often been stated as the real danger of decomposing halogenated propellants. This is not true. The halogen acids are equally dangerous and are present in considerably greater quantities. Fortunately, thermal decomposition is not a serious problem. The halogen acids are so irritating that, even at concentrations below any seriously toxic level, a person normally cannot remain in such an atmosphere. For example, should a housewife spray an aerosol insecticide directly into an open gas flame in her kitchen for a sufficient period of time to generate quantities of decomposition products, she would be driven from the room immediately by the irritating effects of the halogen acids."

Mr. Root, in the conclusion of his article, suggests that, "though shellac and PVP may have been good enough in the first few years of hair spray development, the highly competitive market faced by hair sprays today is demanding new and better resins. What perhaps is the ultimate in hair spray products will be one which can be used on pin curls to provide a permanent wave and then used on the hair after it is styled to hold it in place . . ."

Mr. Foresman leans strongly toward pressure filling in his article: ". . . There is currently very little justification for considering cold fill for new installations. The cold fill process is still a factor in the aerosol industry for only one reason—the existence of large investment equipment which will still perform satisfactorily and has not been paid off to the point where its owners feel it can be economically jettisoned . . . What is wrong with cold filling can be illustrated by the analogy—cold filling is to pressure filling as an arc lamp is to a fluorescent tube. Cold filling requires large quantities of energy to chill the propellant and concentrate from ambient temperature to as low as —40°F. This energy is a total loss and this loss is compounded by the fact that additional large amounts of energy must be applied to the container to raise the temperature to 130°F. for the ICC test. Add to these almost useless costs the waste of propellant flashing out of the containers as they are filled and it will be seen that direct waste is a serious factor."

•

WRITING in the October issue of the "Aerosol Marketer's Newsletter" (published by John C. Stalfort & Sons, Baltimore), John W. Hart discusses at length a technique for filling hygroscopic concentrates. He reports that the first approach was a two-stage cold fill, which was discarded because of water-based soaps.

The need to eliminate the liquid, Mr. Hart says, gave rise to powder filling (which, in effect, complicated the problem even more). He reports that the problem was solved by enclosing the powder machine and filling machine and placing them under positive pressure.

"This was to be accomplished with a plexiglas enclosure and a dehy-

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2

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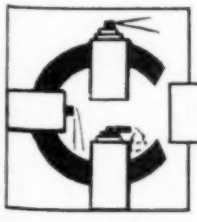

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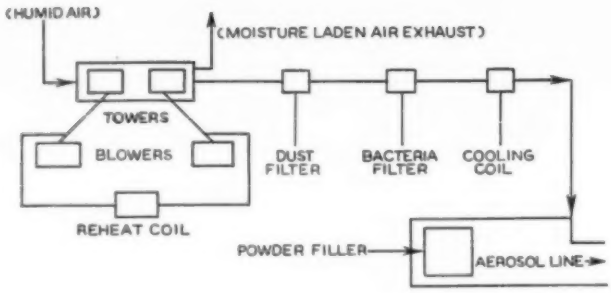

drator system to achieve a 35% relative humidity. It was decided that two dehydrator towers and a blower (with sufficient cfm to flow through a bacteriostatic filter) would be used, and a condensing unit would also be used to cool the design cfm to a 48°F. dew point. The dehydrator tower is an automatically regulated dual-tower desiccant dehumidifier. Each tower contains a 50-pound charge of permanent silica gel drying agent. A blower circulates 150 cfm of air through the absorbing tower, while the desiccant in the other tower is regenerated by 50 cfm of outside air. This air is electrically heated and causes the absorbed moisture of the silica gel to be vaporized. The blower expels it to the outside. There is a slight rise in relative humidity, as the tower being used approaches the switchover position."

Mr. Hart concludes that the system permits his company to "hold better than the 35% relative humidity that was our goal. We have had some good results as low as 5%."

•

AN article discussing the growth of the French aerosol industry between the years 1955 and 1958 has been written by Claude Franck for the September issue of *Parfumerie, Cosmetique, et Savons,* leading French trade magazine in the field. Acknowledging that the desire for secrecy is a problem in collecting such data, Mr. Franck suggests that efforts by the French Aerosol Committee would help obtain statistics for future publication.

Mr. Franck reported that in 1955, 276 tons of flourinated hydrocarbon propellants were produced, while in 1958, 1130 tons (an increase of 300%) were made. In 1955 200,000 glass aerosol containers, while in 1958 the figure rose 1000% to 2 million. In 1955, 1.6 million metal aerosol cans were produced, as against 11.9 million in 1958. In 1955 there were 2.4 million aerosol valves made in France, and in 1958 the figure rose 630% to 14.8 million.

Because of the large rises in French aerosol production since 1955, Mr. Franck contended, accurate predictions about 1960 production would be extremely difficult to make.

•

Coty Production Chief Dies

James W. Winchester, production superintendent for Coty Perfumes, Inc., New York perfume house, died last month at the age of 41. He had held the perfume post for 18 months.

Aerosol Food Store Sales Show Gain

AEROSOL products continue to gain strongly in food stores, a survey published in the August 29 issue of *Food Field Reporter* has revealed. Substantial gains were noted for all aerosols, especially room deodorants and insecticides.

Among the major aerosol gains were whipped cream, which gained 9.2% as sales of fresh cream dropped 0.5%. Room deodorants rose $3,320,000, or 17.5%, and pressured shaving creams gained by $1,990,000, or 16%. Some of the leading aerosol product types are shown in the table below.

What Customers Spent for All Products Sold in Food Stores
(Add 000 to All Dollar Figures)

PRODUCTS	1959 Value of Total Domestic Consumption	1959 Amount Spent in Grocery Stores	1958 Value of Total Domestic Consumption	1958 Amount Spent in Grocery Stores	1957 Value of Total Domestic Consumption	1957 Amount Spent in Grocery Stores	PERCENTAGE CHANGE From 1958 to '59 Total	From 1958 to '59 Groc.	From 1957 to '58 Total	From 1957 to '58 Groc.
HOUSEHOLD PESTICIDES	$156,630	$71,270	$135,910	$59,930	$125,500	$54,810	15.2	18.9	8.3	9.3
Aerosols	64,600	39,120	52,130	30,390	43,950	26,430	23.9	28.7	18.6	15.0
Moth Control Agents	3,550	940	3,170	860	2,550	730	12.0	10.4	24.4	17.2
Space Sprays	35,960	27,870	27,190	20,690	22,360	17,700	32.3	34.7	21.6	16.9
Surface Sprays	18,440	7,750	15,710	6,520	14,060	6,010	17.4	18.8	11.7	8.5
All Other Aerosols	6,650	2,560	6,060	2,320	4,980	1,990	9.8	10.2	21.6	16.7
Household Deodorizers	55,440	27,040	51,180	24,540	46,960	22,660	8.3	10.2	9.0	8.3
Aerosol	45,440	22,290	39,460	18,970	31,480	15,180	15.2	17.5	25.3	25.0
Others	10,000	4,750	11,720	5,570	15,480	7,480	-14.7	-14.7	-24.3	-25.5
Shaving Cream	65,670	19,620	62,300	17,840	59,600	16,360	5.4	10.0	4.5	9.0
Brushless	11,190	2,410	12,100	2,560	12,800	2,690	-7.5	-6.0	-5.5	-4.9
Aerosol	44,520	14,460	39,540	12,470	36,000	10,840	12.6	16.0	9.8	15.1
Lather	9,960	2,750	10,660	2,810	10,800	2,830	-6.6	-2.3	-1.3	-0.7
Spray Hair Fixatives	76,150	32,590	81,500	30,980	82,540	30,010	-6.6	5.2	-1.3	3.2
Tooth Paste	227,650	139,390	222,590	134,730	202,340	118,920	2.3	3.5	10.0	13.3
Furniture Polish	16,200	9,040	14,780	7,220	13,770	6,820	9.6	25.2	7.3	5.9
Automobile Polish	49,290	10,470	48,080	10,310	46,040	9,840	2.5	1.5	4.4	4.8

As you know, in today's market, your product must be smartly dressed and up-to-the-minute, for maximum sales appeal at the point-of-purchase.

Peerasol* is the distinctive, seamless, aluminum aerosol container that is being chosen by drug, cosmetic, pharmaceutical and specialty product manufacturers to meet a growing consumer demand for smaller pocket and purse size aerosols. It is the only aluminum aerosol container with a patented neck for a leak proof valve-cup fit. This feature, combined with the extruded one-piece construction, makes a container you can market with confidence. Peerasol containers can be handsomely lithographed in two, three, or four colors over a base coat, and come in capacities ranging from one-half to four ounces.

Peerasol is another development of the Peerless Tube Company, a pioneer in the manufacture of collapsible metal tubes as a package for commercial use.

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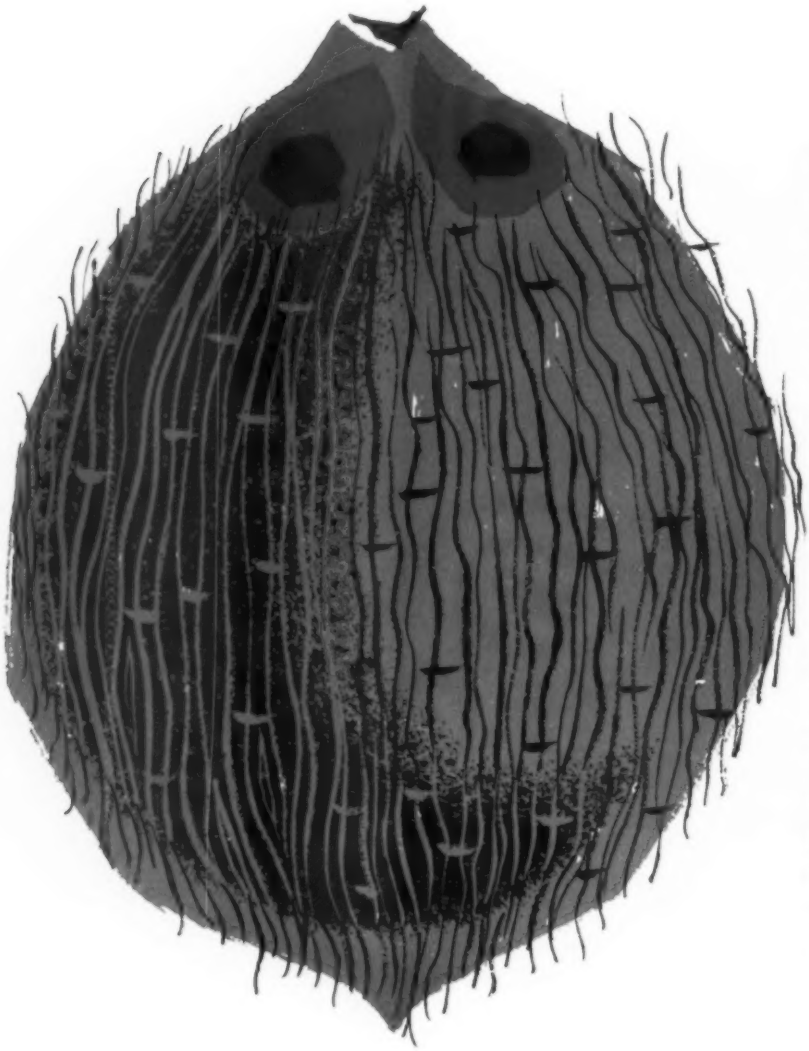

Here's product protection at its best! No dented containers, no leaks, no faulty formulation, no evaporation, no fire hazard. So, if you're in the coconut business, let Mother Nature continue to do your packaging.

But, if you market an aerosol, that's a different story. G. Barr & Company should do your manufacturing. We specialize in private label aerosols exclusively with acres of research, product development, formulation, packaging, storage and shipping facilities to serve you. Hundreds of millions of famous brand name products have been formulated and filled here. Our customers are leaders in their fields. We'd like to have your name with those we serve. May we tell you the complete G. Barr & Company story?

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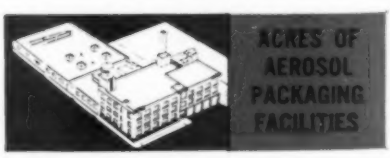


British Product Wins Prize in CSMA Aerosol Contest

THE first foreign entry ever to win the grand prize has been judged best package in the 1960 Aerosol Packaging Awards Competition conducted by the Aerosol Division of the Chemical Specialties Manufacturers Association. "Sprayclean Spot Remover," a product of Durazone (Sales) Ltd., London, England, a package characterized by clean line and relatively uncluttered design, was given the grand award at the CSMA annual meeting in Hollywood Beach, Fla. on Dec. 5.

"Sprayclean" was also judged best in the "Other Household Products" category, as well as in the newly-established "Foreign Products" category. The British firm's victory in the contest broke a consecutive string of two straight contests which were won by food products ("Sizzl-Spray" in 1958 and "Qwip" in 1959), and a string of three straight contests in which California marketers won the Grand Prize. The 1960 contest marked the first time in five years that the Rexall Drug Co. has not won a prize. Since 1956, Rexall has won a total of eight product awards and one grand prize.

Durazone also scored heavily in another product category "Room Deodorants," with its "Dew Air Freshener" taking top honors in the category. Thus Durazone became the first company ever to win three product classifications in one year.

This year's competition, the ninth, was the most popular to date, drawing over 270 entries. The awards, covering 15 product categories, are made on the basis of good design and general sales appeal of the package.

Award recipients in each category are as follows:

AUTOMOTIVE:
Sohio White Tire Cleaner; Standard Oil Co. (Ohio)

INSECTICIDES, REPELLENTS AND MOTH PROOFERS:
Killer Super Bombe Parfumee; Laboratorie Agir (Procede SAFCA), Paris, France

ROOM DEODORANTS.
Dew Air Freshener: Durazone (Sales) Ltd., London, England

PAINTS, ENAMELS, OTHER PROTECTIVE COATINGS AND PAINT REMOVER*:
Krylon Glowing Fluorescent Spray Paint; Krylon, Inc.

the 1960 *Grand Prize Winner*

OTHER HOUSEHOLD PRODUCTS:

Sprayclean Spot Remover; Durazone (Sales) Ltd., London, England (Special Starch Products Sub-Classification)

Easy-On Spray Starch; Boyle-Midway Division of American Home Products Corp.

SHAVE PRODUCTS:

Seaforth Minute Shave: Chesebrough-Ponds, Inc.

HAIR PREPARATIONS:

Breck Hair Set Mist; John H. Breck, Inc.

PERFUMES, COLOGNES AND TOILET WATERS:

Women's Products—Esprit de Parfum; Faberge, Inc.

Men's Products—One For a Man Spray Cologne; Paul D. Blackman Corp.

OTHER PERSONAL PRODUCTS:

Gillette Right Guard Deodorant; Gillette Safety Razor Company

FOOD PRODUCTS:

Taste Tap Spray O'Garlic, Gard Pressure Foods Corp.

MEDICINAL AND PHARMACEUTICAL PRODUCTS

Desenex Aerosol Foot Powder; Maltbie Laboratories Division, Wallace & Tiernan, Inc.

HORTICULTURAL PRODUCTS*:

Black Flag Rose & Flower Spray; Boyle-Midway Division of American Home Products Corp.

VETERINARY & PET PRODUCTS:

Glover's Flea and Tick Killer; H. Clay Glover Company, Inc.

INDUSTRIAL PRODUCTS:

Strauss Dry Lube; Brandywine Photo Chemical Company

Due to the large number of new spray-starch type products entered in the "Other Household Products" category, the judges established a special sub-classification for this group. The winner was "Easy-On Spray Starch," Boyle-Midway Division of American Home Products.

* In two classifications, 'Paints" and 'Horticultural Products," the judges granted only honorary mention awards. Respectively, these went to 'Krylon Glowing Fluorescent Spray Paint." Krylon, Inc. and to "Black Flag Rose & Flower Spray," Boyle-Midway Division of American Home Products Corp.★

Seated (l.-r.) Miss Dorothy Diamond, editor of Women's Viewpoint Column, *Printer's Ink*; Miss Carol Adams, vice-president, National Family Opinion, consumer research organization; Miss Cecile Hayward, *Living for Young Homemakers*. Standing (l.-r.) Frank Gianninoto, package designer of Gianninoto Associates; Peter Hilton, president, Kastor Hilton, Chesley, Clifford and Atherton, Inc.; James Moyer, head buyer for cosmetics, Lord & Taylor; and Kenneth L. Hirst, head buyer for cosmetics and toiletries, W. T. Grant.

SUBJECT INDEX

A listing of all major aerosol articles carried in *Aerosol Age* during 1960

Advertising and Public Relations

Advertising, The Gun Points At (An Editorial)....March 19
Legislation for TV Commercials Urged by FCC....March 22
New FTC Charges on Advertising Draw Warnings from TGA, Agencies.....Feb. 65
Public Relations—Forgotten Aerosol Business Activity.....April 34
Uninformed Consumer, The (An Editorial).....Dec. 35

Components and Raw Materials

Aerosol Dip Tubing, Action Plastics—Important Source for.....April 28
Buyer's Guide.....Oct. 35
Locking Cap is Used to Prevent Pre-Sale Product Tampering.....March 51
Perfumery Problems with New Aerosols.....Jan. 18

Containers

Aluminum Aerosol Containers Introduced in Canada.March 20
Aluminum Containers Seen Becoming More Significant.Jan. 27
Coated Glass Aerosol Containers, The Evolution of....April 26
Crown's Aerosol Exhibit is Shown at International Fairs.....July 32
Drop Testing of Nylon and Delrin Aerosol Containers..Sept. 40
New Cover Seal Prevents Pre-Sale Cap Removal.....Feb. 60
New, Lighter Tinplate Hinted by U. S. Steel President.....March 58
Nylon and Delrin Aerosol Containers, Drop Testing of.Sept. 40
Peerless Tube Story, The.....July 20
Plastic Aerosol Containers.....Feb. 35
Richford Story, The.....Aug. 43
Spray Can Handle.....March 37

Custom and Private Label Filling

Aerosol Techniques Unveils New Filling Line.....Oct. 89
Beating the Bushes (An Editorial).....Nov. 19
Capitol Packaging Unveils New Filling Plant.....June 36B
Does It Pay to Fill Your Own Aerosols?.....Dec. 39
Cleaning Foreign Matter from Aerosol Containers....Dec. 42
Ellis Criticizes Price Cutting.....Dec. 81
Filler Credited with Major Pharmaceutical Role.....June 24
Mechanics of Pressurized Packaging, The.....May 72
O'd Empire—Package Design and Custom Filling.....May 40
Par Installs New Filling Line.....Dec. 70
Pressure Filling and Crimping Problems.....Aug. 46
Pressure Filling with Metering Valves, A Guide to....Sept. 32
Pressure Filling with Metering Valves, Armstrong Claims.....May 76
Gene Rose Discounts Market Saturation Theory.....Oct. 79
Stalfort Installs "Midget" Pharmaceutical Line.....May 62
Strouse Awarded New Ether Filling Patent.....May 68
Whither the Custom Filler? (An Editorial).....Oct. 65

Foreign Reports

Aerosols Booming All over Europe.....March 24
Aerosols in South Africa.....Nov. 27
Argentine Industry Hampered by High Propellant Costs.....Dec. 82
Canada, First Aluminum Aerosol Containers Introduced in.....March 20
Europe is Split into Two Trade Blocs.....Aug. 52
Foreign Patents.....Jan. 30
Italian Industry is Seen Growing Rapidly.....Aug. 39
Japanese Industry Reuses Valves for Aerosol Package.April 48
Trade Blocs' Rift Widens in Europe.....May 52

Marketing

Advice to the Prospective Aerosol Marketer.....Sept. 30
Aerosols, Past, Present, & Future.....Dec. 41
Aerosol Product Survey Shows Continued Gains.....June 41
Aerosol Profit Margin Called Major Factor for Food Chains.....Jan. 25
Aerosols Register Sales Spurt in Great Britain.....Feb. 30
Consumer Survey Reveals Gains in Consumer Knowledge.....Jan. 40
Does the Product Have a Rationale?.....Feb. 20
Esquire Aerosol Story, The.....Sept. 22
Future Market in Europe (An Editorial).....Aug. 23
Gulf Introduces New Type Valve for Ant-Roach Bomb.Feb. 58
Milwaukee Journal Study Surveys Three Aerosol Products.....Aug. 28
Net Weight of Aerosols, Peterson Explains CSMA's Views on.....July 34
Nielsen Survey Predicts New Gains for Leading Products.....Jan. 24
Nonfood Aerosol Production Seen Doubling in Next Decade.....Jan. 18
Selling the Overseas Market.....May 35

Meeting Reports

Aerosols Featured at National Hardware Show.....Nov. 29
Aerosol Invitational Golf Tournament.....Sept. 28
Chicago SCC Hears Criticism of Animal Test Results..Feb. 23
Concern Is Expressed Over Market at CMCS Meeting.Dec. 36
Druggists Show, Aerosols Highlight International....Dec. 46
FEA Meets in Dusseldorf.....June 36
Interpack 1960.....June 36D
National Packaging Show—A Photographic Tour.....May 43
Packaging Conference Hears Call for Product Improvement.....May 58
Packaging Institute Holds Aerosol Symposium.....July 24
SCC Holds National Symposium.....Nov. 52
SCC, TGA Meet in New York.....June 38
TGA and SCC Meet in New York.....Jan. 39
TGA Meets in Maine.....Aug. 35

Propellants

Butane and Propane as Aerosol Propellants (Part IV).Feb. 54
Butane and Propane as Propellants.....June 26
Chlorinated Hydrocarbons for Cosmetic Aerosols.....Feb. 49
Ether Filling Patent is Awarded to Strouse.....May 68
Hydrocarbon Propellants, to Reduce Product Costs, Use of.....Oct. 100
Nitrogen Gassing.....April 45
Non-Aqueous Foam Aerosols.....Nov. 33
Particle Size as a Factor in Product Efficiency.....Oct. 80
Propellant/Glycol Systems.....Feb. 26
Quick-Breaking Aerosol Foams.....May 50
Safety and Fire Considerations for the Aerosol Industry.....March 33
Solubility Parameters for Aerosols.....May 63
Toxicity of Fluorinated Hydrocarbon Propellants.....Sept. 25
Unwanted Water in Pressurized Packages.....April 60

Research and Testing

Aerosol Technology Lab Instituted at Iowa State.....April 56
Animal Test Results Criticized at SCC Meeting.....Feb. 23
Common Sense Product Testing (An Editorial).....Feb. 19
Photographs for the Aerosol Laboratory.....Oct. 96
Testing of Aerosol Products, The.....May 36
Union Carbide Opens New Technical Service Laboratory.....June 47

Valves

Ant-Roach Bomb, Gulf Introduces New Type Valve for.Feb. 58
Metering Valves, Pressure Filling with.....Sept. 32
Newman-Green Valves.....May 46
Propellant Cartridge Winning Non-Aerosol Perfume Holdouts.....March 23

Products

Cosmetics

Cosmetic Aerosols, Chlorinated Hydrocarbons for.....Feb. 49
Cosmetics, The Formulation of Aerosol.....Aug. 24
Hair Sprays Are Prize in Major Court Battle.....Oct. 90
Perfume Holdouts Succumbing to New Propellant Cartridge.....March 23

Paints, Insecticides

DuPont Paint Survey Reports Need for Consumer Education.....Dec. 86
Hazardous Labeling Law, What it Means to the Aerosol Marketer.....Oct. 74
New Developments in Aerosol Paints.....April 40
Prentiss Develops New Insecticide.....June 44
Prentiss Unveils New Pyrethrum Processing Plant....Jan. 34
Toxic New Aerosol Finds Use in Papermaking Plants..Oct. 72

Foods

Aerosol Food Paper Highlights Packaging Forum.....Dec. 44
Aerosols and Food Industry (An Editorial).....Jan. 19
Food Chains Judge Aerosol Profit Margin a Major Factor.....Jan. 25
Food Product Readied for National Marketing, New..Sept. 43
Food Propellant, DuPont Issues Status Report on....Sept. 44
Formulation Concepts for Pressurized Foods.....March 40
"Qwip"—Another Success Story in Foods.....April 21

Pharmaceuticals

Aerosol Inhalation Therapy.....Sept. 34
Aerosol Pharmaceutical Market Called Below Potential.....June 22
Diloderm Foam Aerosol, Development of the.....June 27
Filler Credited with Major Pharmaceutical Role.....June 21
New Drug Applications for Pharmaceutical Aerosols (Part I).....June 30
New Drug Applications for Pharmaceutical Aerosols (Part II).....July 30
Non-Aqueous Foam Aerosols.....Nov. 33
Pharmaceutical Aerosol, The Market Potential For....July 27
Topical Pharmaceuticals in Aerosol Form.....Dec. 63

Miscellaneous

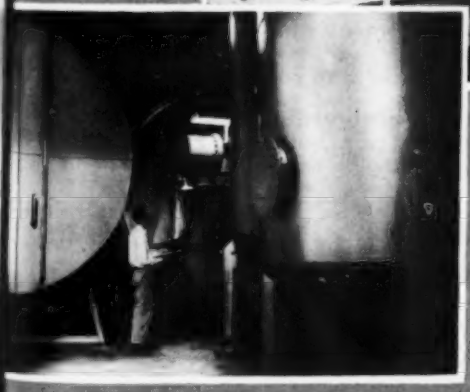
Aerosols at Michigan State U.....March 42
Aerosol Laboratory Established at Rutgers.....Dec. 78
Aerosol Movie Device.....March 27
Aerosol Movie Device Termed Critical Failure.....Jan. 29
Aerosol Regulations—And Their Anomalies.....Aug. 30
Aerosol Technical Courses Slated For St. John's University.....Feb. 24
Hazardous Label Bill is Passed and Signed.....Aug. 36
Technical Aspects of Aerosol Air Fresheners (Part I)...Oct. 66
(Part II)..Nov. 20
(Part III)..Dec. 52

Aerosol Age
1960 Author Index

Ackerly, Robert L.; Hazardous Labelling Law and the Aerosol Marketer.....Oct. 74
Birdsall, John; The Testing of Aerosol Products.....May 36
Clapp, C. P.; Safety and Fire Considerations for the Aerosol Industry.....March 33
Clark, Dr. Tom C.; Aerosols Booming All Over Europe.....March 24
FEA Meets in Dusseldorf.....June 36
Interpack 1960.....June 36D
DeGray, William Grant; Nitrogen Gassing.....April 45
DiGiacomo, Victor; Perfumery Problems with New Aerosols.....Jan. 30
Cosmetic Aerosols.....Aug. 24
Downing, R. C.; Toxicity of Fluorinated Hydrocarbon Propellants.....Sept. 25
Ford, George F.; Butane and Propane as Aerosol Propellants.....Feb. 54
Foresman, Robert A. Jr.; Formulation Concepts for Pressurized Foods.....March 40
Photographs for the Aerosol Laboratory.....Oct. 96
Unwanted Water in Pressurized Packages.....April 60
Fowks, Milton; Use of Hydrocarbon Propellants to Reduce Costs.....Oct. 100
Franz, H.; Butane and Propane as Aerosol Propellants.Feb. 54
Gustin, Juljius; Pressure Filing and Crimping Down..Aug. 46
Hauser, Julius; New Drug Applications for Aerosol Pharmaceuticals.....June 30
New Drug Applications for Aerosol Pharmaceuticals (II).....July 30
Herzka, A.; Aerosols Register Sales Spurt in Great Britain.....Feb. 30
The Mechanics of Pressurized Packaging.....May 72
Holloway, Henry F.; The Market Potential for Pharmaceutical Aerosols.....July 27
Iosaki, H.; Reuse of Containers Highlights Japanese Developments.....April 48
Johnsen, Montfort A.; Technical Aspects of Aerosol Air Fresheners.....Oct. 66
(Part II).....Nov. 20
(Part III).....Dec. 52
Kuebler, Dr. Hans; Chlorinated Hydrocarbons for Cosmetic Aerosols.....Feb. 49
Livingston, E. R.; The Spray Can Handle.....March 37
Lynch, Vincent de Paul; Aerosol Inhalation Therapy..Sept. 34
Madinabeitia, D.; Toxicity of Fluorinated Hydrocarbon Propellants.....Sept. 25
Mans, A.; Aerosols in South Africa.....Nov. 27
Meshberg, Philip; A Guide to Pressure Filling with Metering Valves.....Sept. 32
Drop Testing of Nylon and Delrin Aerosol Containers.....Sept. 40
Otterson, Lewis L.; Plastic Aerosol Containers.....Feb. 35
Peterson, Harry; Does It Pay to Fill Your Own Aerosols?.....Dec. 39
Reed, Allen B. Jr.; The Application of Solubility Parameters to Aerosols.....May 63
Robertson, W. M.; The Evolution of Coated Glass Aerosol Containers.....April 26
Rudzki, Dr. H. S.; Does the Product Have a Rationale?.....Feb. 20
Sanders, P. A.; Non-Aqueous Foam Aerosols.....Nov. 33
Propellant/Glycol Systems.....Feb. 26
Sciarra, John J.; Aerosol Inhalation Therapy.....Sept. 34
Sciarra, John J.; Tinney, Francis J.; Feeley, William J.; Topical Pharmaceuticals in Aerosol Form.....Dec. 63
Sherwood, Peter W.; New Developments in Aerosol Paints.....April 40
Tuttas, S. V.; Aerosols, Past, Present, and Future.....Dec. 41
Wolff, Andrew H.; Foreign Aerosol Patents.....Jan. 30
Yeomans, A. H.; Particle Size as a Factor in Product Efficiency.....Oct. 80

Practice makes perfect

...Offices and Lab-...ies. Main plant ...s four blocks ...ie Railroad.



One of the largest and most adequately staffed laboratories and quality control departments in the industry.

Ample tankage predominantly of stainless steel assures finest manufacturing and storage facilities.

and, certainly, we get a lot of FILLING practice!

Are you the captive of your own captive filling plant? Are fixed overheads, high operating costs and fair-to-middling filling methods shrinking your profit margin?

Profitable packaging requires know-how that can be gained only by practice, and more PRACTICE. We believe we can do your filling better and more economically than you because:

1. **Our entire activities are confined to mixing and filling operations, especially for liquid and aerosol products.**
2. **We do the filling for, not one, but *many* manufacturers.**
3. **We operate seven separate specialized filling plants.**

In today's highly competitive markets, the appearance and efficient functioning of the package have a powerful effect on sales. Aerosols filled with product in the FLUID plant are uniformly accurate in weights and pressures. Quality control of incoming materials and of mixing and filling operations here leave no margin for error.

Your filling operations should be our job. Send the coupon for further information regarding FLUID'S facilities for serving you.

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Fluid Chemical Company, Inc.
874 Mt. Prospect Ave., Newark, N. J.

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nature of product

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NAME _____ TITLE _____

COMPANY _____

STREET _____

CITY _____ STATE _____

NEW combination wins rapid acceptance

STERLING "SNAP-ON" single-shell OVERCAP*

and

CANCO "SNAP-LOCK" (PATENT APPLIED FOR) PRESSURE CAN

Aerosol Package Buyers, in varied product-fields, have quickly recognized the practical benefits of the new Sterling **single-shell** Overcap. Proof is the ever-growing list of orders for American Can Company's "Snap-Lock" pressure can with Sterling's "Snap-On" **single-shell** Overcap.

*U.S. and foreign patents applied for by Sterling Seal Co., Erie, Pa.

- ***Single-shell design cuts costs***
- ***Snap-on feature protects valve and contents***

(1) Flat top simplifies stacking.

(2) Overcap available in exact color match like "Plasti-Kote" cap, may be coated, or multi-color printed with any message and design.

(3) Plastic tamper-proof band ends casual sampling and cap switching. Protects product from packaging line to consumer.

Ask Us How "SNAP-ON" Cuts Your Costs and Adds Package Sales-Appeal . . .

STERLING SEAL company
Erie, Pennsylvania

World's Largest Producers of Aerosol Caps and Closures.

news of pressurized packaging

Schwaikert Heads Bon Ami

The board of directors of the Bon Ami Co., New York, last month elected Ralph A. Schwaikert, 33, president of the 76-year old household products company. The election of Mr. Schwaikert, is a promotion from his previous post of executive vice-president. He joined Bon Ami in 1954, as plant manager, and was elected a member of the board of directors in June 1960.

In announcing Mr. Schwaikert's election, R. Paul Weesner, board chairman who had held the dual posts of chairman and president, stated, "Bon Ami has aggressive expansion plans and this move reflects the board's decision to strengthen top management with young, proven talent that can share important responsibilities as the company continues to grow."

Mr. Schwaikert is a graduate of the Mt. Hermon School, Cheshire Academy, Hobart College and Rutgers University. Prior to joining Bon Ami he was assistant plant manager for Oakite Products Co.

•

New Filler for West Coast

Pacific Aerosol Packaging Co., a new contract packager in the San Francisco area, has been organized by three individuals well known in West Coast packaging circles. The address of the company is P.O. Box 36, Mt. Eden, Calif.

Heading the company is Arthur R. Mertens, former vice-president for marketing of Carling Brewing Co., Cleveland, and household products manager of the S. C. Johnson Co., Racine, Wis. Walter Lim, former technical director of Par Industries, Inc., Los Angeles custom filler, will direct the operations of the new company. Prior to his association with Par, he was chief chemist of Purepac Corp., Los Angeles pharmaceutical marketer. Production manager is Gerald V. Todd, former industrial engineer at Riker Laboratories, Inc., Northridge, Calif. and design engineer at Mojonnier Associates (now Kartridg-Pak), Franklin Park, Ill. aerosol equipment manufacturer.

•

Revlon Sales Set Record

Revlon, Inc., New York, and its subsidiaries reported the highest sales and earnings in its history for the first nine months of 1960. Net sales increased 7.08% to $95,025,000 from $88,743,000 in the first nine months of last year.

Earnings for the first nine months of 1960 were $7,800,000, equal to $3 a share or 4.24% above $7,483,000 or $2.89 a share during the first nine months of 1959. Earnings for the nine months ended Sept. 30, 1959, did not include extra net income of $2,579,307 realized by the company from the sale of a portion of its investment in Schering Corporation and other special credits.

•

SCA Buys Supermarket Jobber

Strong, Cobb & Arner, Inc., Cleveland pharmaceutical manufacturer, has acquired Rawson Drug & Sundry Co., distributor of health and beauty aid products and housewares to supermarkets. Rawson services and distributes through its own racks installed in about 1,700 stores in California and Nevada. It will continue to operate as an independent but wholly-owned subsidiary of Strong, Cobb, & Arner.

•

New British Aerosol Firm

Clifton Aerosols, Ltd., a new company to manufacture and sell chemical sprays and chemical products, has been incorporated at Clifton Street, Bradford, England. The principals of the company are X. F. N. Lawler and A. H. Evans.

Glynn New Breck VP

The promotion of Thomas M. Glynn to the post of vice-president of manufacturing has been announced by John H. Breck, Inc., Springfield. (Mass.) hair preparations firm. Formerly manager of his firm's main plant located in West Springfield (Mass.), Mr. Glynn has been with the Breck organization since 1943, during which time he has had assignments in cost accounting, purchasing, production control and planning production.

A graduate of American International College (Springfield, Mass.) Class of 1942, with a B. S. in B. A., he is a member of the American Management Association, Institute of Management Sciences, Packaging Institute and the Business and Defense Services Administration.

•

Shulton Ups Christmas Effort

Shulton, Inc., New York cosmetics and toiletries marketer will have what is probably the most ambitious Christmas advertising campaign in the industry, Frank N. Carpenter, Shulton vice-president claimed last month. "Heavily increased schedules in all media," he said, "will be used to support five television specials which begin Thanksgiving week and extend through the five weeks until Christmas." He reported that full-color, double-page spreads will appear in *Life, Saturday Evening Post, Ladies Home Journal,* and *McCall's,* along with full-color one-page advertisements in *Redbook, Look, Cosmopolitan, Farm Journal, This Week, Family Weekly, Atlanta Journal-Constitution,* and the *New York Daily News Roto Section.*

Mr. Carpenter said that the campaign will also include a heavy concentration of television spot commercials, a strong spot radio campaign, and a stepped-up newspaper campaign.

Two Join Continental Filling

Continental Filling Corp., Danville, Ill. custom filling company, recently announced two additions to its quality

Winslow

Planinsek

control staff. Louis J. Planinsek was named to the chemical quality control staff at the Danville plant, while Ralph H. Winslow was appointed plant and quality control chemist at the company's Hobart, Ind. plant.

Mr. Planinsek was formerly in the quality control department of the American Agricultural Chemical Corp. He obtained his B.S. degree in chemistry from the University of South Carolina. Mr. Winslow, who holds a B.S. degree in chemistry from the University of Illinois, was formerly with the Cities Service Oil Co., where he worked with petroleum hydrocarbons. He also worked as a chemist with the Quaker Maid Co. and the Campbell Soup Co.

•

Suntan Agent Patent Granted

Drug Research Corp., New York, last month announced that it has been issued U.S. Patent No. 2,949,403 for "no-sun" tanning products containing dihydroxyacetone. The patent is reported to specify that the use of the material for tanning the skin is an exclusive invention and is a use patent, rather than a formula.

In a full page advertisement in the October issue of *Beauty Fashion*, Drug Research Corp., marketer of "Man-Tan," "Tan Perfect," "Positan," and "Miss Mantan" announced a list of companies which it is suing for patent infringement, and in some cases, unfair competition. The list of companies, and their products includes: Coppertone Corp. and Plough, Inc., ("Q-T"), Tan-O-Rama, Inc. ("Tan-O-Rama"), Rolley Co. and Botany Industries, Inc. ("Transation," Ed Pinaud, Inc. and Nestle-Lemur Inc. ("Rapid-Tan"), Chemway Corp. ("Tan-O-Tan"), Leonet Corp. ("Magic Tan"), and Procapa Products ("Pro Tan"). The advertisement warned that Drug Research is "prepared to file as many law suits as necessary in the U.S. Federal District Courts against infringers for triple damages."

•

Carbide Names John Hulten

John R. Hulten has been named manager—specialty chemicals marketing for Union Carbide Chemicals Co. Division of Union Carbide Corp., New York. He is responsible for marketing of "Ucon" brand fluorocarbons to the aerosol, air conditioning, and refrigeration industries, and agricultural chemicals.

Formerly manager—fluorocarbons marketing, Mr. Hulten joined Carbide's fellowship at the Mellon Institute of Industrial Research in 1941 after receiving his bachelor of science degree in chemical engineering from the University of Wisconsin in 1941. He has been with the firm ever since, except for three years spent in the Navy. Prior to appointment in his present post in 1957, he served as Albany (N. Y.) district manager, Philadelphia district manager, and Central Division manager.

•

Quinn Joins Oil Equipment

Oil Equipment Laboratories, Inc., Elizabeth, N. J., aerosol valve manufacturers, has announced the appointment of John K. Quinn as sales manager for New England and New York State. Formerly assistant sales manager for Risdon Mfg. Co., he will handle valve sales, as well as custom plastic molding for the recently acquired Wagner Plastic Corp., a wholly owned subsidiary of O. E. L., Inc.

Mr. Quinn, a graduate of Yale University and an Ensign, U.S.N.R., during World War II, is a native of Lowell, Mass., and is now residing in Bristol, Conn. He has formerly served as assistant to president of Raytrie Knitting Mills and as a member of the U. S. Rubber Co. Sales Division.

•

Taw Is New Revlon VP

Revlon, Inc. has appointed Dudley J. Taw as vice-president and sales manager of the independent drug store sales division.

Puritan Names Winer, Daley

Appointment of Joseph J. Winer to the newly-created post of assistant-to-the-president, and assistant treas-

Daley

Winer

urer have been announced by Puritan Aerosol Corp., Boston. Formerly comptroller, Mr. Winer is succeeded in that capacity by Richard H. Daley. In addition to administrative duties, Mr. Winer is in charge of purchasing and customer service. The latter responsibility includes assisting customers in solving the many problems associated with filling and marketing new aerosol products.

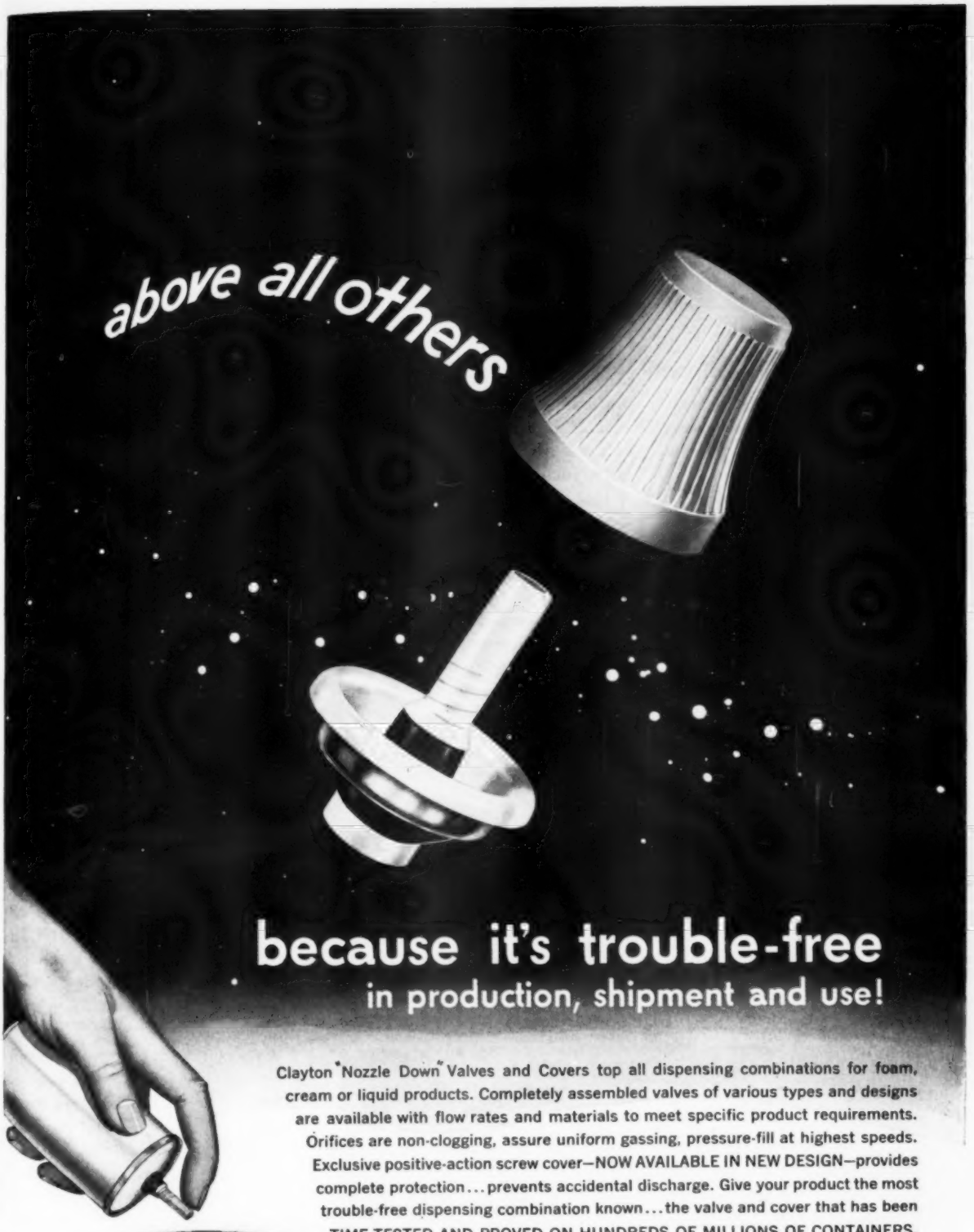
Mr. Winer has been with Puritan since its formation during World War II. He held the position of office manager when the company entered the custom loading field in 1948 (it had been engaged in liquid filling exclusively), and since that time has served in various management capacities, including assisting customers in new product planning.

Mr. Daley is responsible for supervision of office personnel, and will assist management in creating new accounting systems, including cost control and inventory control. Before joining Puritan, he was treasurer of a large Boston enginering firm. He attended Boston College and Bently School of Accounting and Finance.

•

Pfaudler Permutit Stock Listed

Pfaudler Permutit, Inc., Rochester, N.Y., manufacturer of filling equipment and other liquid handling equipment, last month was listed on the New York Stock Exchange. Organized in 1884 as the Pfaudler Co., the company was consolidated with The Permutit Co. in 1957. It has subsidiaries or affiliates in the U.S., Canada, Germany, Great Britain, Mexico, and Japan.



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Clayton "Nozzle Down" Valves and Covers top all dispensing combinations for foam, cream or liquid products. Completely assembled valves of various types and designs are available with flow rates and materials to meet specific product requirements. Orifices are non-clogging, assure uniform gassing, pressure-fill at highest speeds. Exclusive positive-action screw cover—NOW AVAILABLE IN NEW DESIGN—provides complete protection... prevents accidental discharge. Give your product the most trouble-free dispensing combination known... the valve and cover that has been TIME TESTED AND PROVED ON HUNDREDS OF MILLIONS OF CONTAINERS.

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Aerosol Filling Line Is Installed by Ampruf Paints

AMPRUF PAINT CO., El Monte, Calif., has begun production of aerosol paints at the rate of 8,000 cans per day in its own aerosol assembly plant. The company thus becomes the first paint manufacturer in the West to package its own aerosols. Ampruf, one of the West Coast's pioneers in aerosol paints completed installation last month of its new filling line, a Mojonnier Series 707, and added specialized modifications including a scrambler unit, automatic marble drop indicator, and many product control measures.

A unique feature of the new plant is an electronic device which causes a light to flash when each marble is dropped into an aerosol can. This precaution is said to be important in reducing the number of rejects that would have to be detected by inspectors after the cans had left the production line. The aerosol machine itself includes an electromatic filler, purging unit, crimper, pressure filler, pressure tester with automatic ejector, and a king-size hot water bath.

According to Robert Sencer, president of Ampruf: "Our sales this past year have soared above one and one-half million units, and we have determined that our customers will benefit if we do all the aerosol manufacturing and filling in our own plant in El Monte. We believe that the new line will enable even closer quality control and further shorten the time of delivery."

Sheppard Wesissman, vice-president, and Mike Gildon, chief chemist, drew up layouts for an intricate filter change system which allows rapid color changes without undue loss of time. Ampruf had the services of J. C. L. Engineering Co. of Los Angeles in arranging for design and installation of the new aerosol plant.

In the past year, 15,000 feet of new area, including several new buildings, was added. Additional property has been purchased and drawings completed for a building program that will be greater in the next six to eight months than took place during the last year. Also, Ampruf will soon announce the replacement of their "color-magic" line with a brand new improved P.V.A. synthetic rubber emulsion paint.

Ampruf previously used aerosol fillers to handle their production—one company as far east as Chicago. The new aerosol filling machine has been so successful that the company already plans an additional line which would double present capacity. While Ampruf is doing some outside packaging at the present time, the company's own business occupies most of the production time.

Ampruf had 10 or 12 aerosol products just a little over a year ago, but today has more than 50 colors, finishes and special products, all in the paint field. All of the aerosol paint products are sold at 98 cents retail, which Mr. Sencer emphasizes has been a particular attraction for the impulse buyer. "Our sales of aerosol products in 1961 should rise considerably above two million units, and remember, we are selling to customers in the West only," he said.

•

Extend St. John's U. Grant

St. John's University's College of Pharmacy has received a renewal of a $3,000 grant-in-aid from the General Chemical Division of Allied Chemical Corp. for continuation of research in the field of medicinal and pharmaceutical aerosols, it has been announced by Dr. Andrew J. Bartilucci, Dean of the College of Pharmacy.

The aerosol project at St. John's is under the direction of Dr. John J. Sciarra, associate professor of pharmaceutical chemistry, assisted by Francis Tinney, a graduate fellowship student. It was begun in September, 1959 and is devoted to a study of the solubility and stability of various medicinals in aerosols.

In addition to its laboratory facilities, St. John's offers various seminars and courses in aerosol technology, Dr. Bartilucci said.

•

British Firm Begins Export

The Durazone-Choice Companies, London, marketer of aerosol room deodorants, insecticides, and spot removers, last month announced plans to extend their overseas activities. The company's "Choice" line of products will be exported to Commonwealth and other countries at prices claimed to be among the lowest in the United Kingdom. The six ounce size of the company's products are listed as $3.70 per dozen f.o.b. London, and the 16-ounce size at $6. per dozen.

The "Choice" line was recently expanded to include ant killer and garden spray, as an addition to the fly killer and moth proofer already a part of the insecticide line.

•

Thompson Is TGMAC Director

The Toilet Goods Manufacturers Association of Canada has elected John J. Thompson, vice president of Dodge & Olcott of Canada, Ltd., to be associate director for the year 1960-1961.

PRESSURE GAUGE

A newsletter published periodically by

AEROSOL TECHNIQUES, INC.

BRIDGEPORT 5, CONNECTICUT

CSMA EDITION — DECEMBER, 1960

BIG LETTERS IN ATI'S ALPHABET: R. & D.

Product research and development, which Aerosol Techniques, Inc., has regarded as a life-line of aerosol progress ever since the company's inception, are getting a top priority at ATI in terms of people and equipment. The people are topnotchers who not only have the technical know-how and imagination but the understanding of practical marketing problems essential to the development of products that make sense. The equipment provides ATI's customers, present and future, with the best possible tools for product development.

ATI's heightened R. & D. program moves forward in these major areas: (1) products not on the market or in various stages of development; in this category are new household products with exciting potentialities as convenience advances, (2) development of water-based products, with concentration of efforts on improving performance and lowering costs, and (3) acceleration of the liquefied petroleum gassing program which ATI has importantly implemented with the installation of a completely new large-volume LP line.

FROM ATI TO YOU:

Each annual meeting of the CSMA points up the extraordinary growth of the aerosol industry. As a company that has shared in this growth and tries to measure up to the responsibilities involved, we congratulate CSMA and its Aerosol Division in their reciprocal contributions.

H.R. SHEPHERD, President
Aerosol Techniques, Inc.

It is noteworthy that about 40% of the business ATI has today could not have been filled two years ago, because the products did not exist.

ATI AEROSOL RESEARCH GRANT AT COLUMBIA

Aerosol Techniques is continuing its grant for graduate work in aerosol research at the College of Pharmacy at Columbia University. This grant was initiated in 1958 with the establishment of an Aerosol Research Laboratory, the first such at any college, which is maintained under the direction of Professor Joseph L. Kanig. The first graduate to base his Master's thesis on studies made in this laboratory, Harvey Mintzer, is now a staff chemist at ATI.

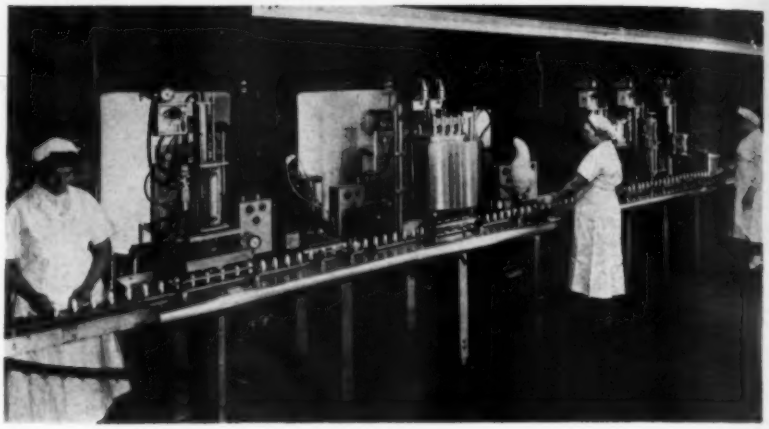
IN THE A-T-EYE

A patent (No. 2,953,284) for a new type of lubricant for the inside walls of an aerosol container has been granted to ATI'S Fred Presant, Sam Prussin and H. R. Shepherd; the lubricant permits thick viscous liquids, such as toothpaste, to settle evenly at the bottom of the can, with minimal hang-up along the walls . . . The New York office of Aerosol Techniques, Inc., is now located at 386 Park Avenue South, telephone MUrray Hill 5-4686 . . . Latest publication to appear under the ATI imprint is "The Aerosolette," of, by and for the company's employes; the able and hard-working editor is Phil Kleppe Jr., better known professionally as quality control manager . . . This same Phil Kleppe and his quality control department have been featured in "He guards your good name in aerosols" advertisements of the Isotron division of Pennsalt Chemicals in leading trade magazines . . . Getting back to "The Aerosolette," one of its features is a series about the companies who are the customers ATI serves.

PHIL KLEPPE

AEROSOL TECHNIQUES, INC., is exclusively devoted to private label manufacturing, research and development of aerosol cosmetics, pharmaceuticals, industrial and chemical specialties. ATI's newsletter, "Pressure Gauge," including technical and market data, will be mailed regularly upon request.

Stalfort Installs Midget Aerosol Line for Perfumes



JOHN C. STALFORT & Sons, Inc., Baltimore, has completed new equipment installation on its "midget" filling line specifically designed for colognes and perfumes. The line began operation in November, handling a nationally-known perfume. According to Irving Stalfort, vice-president and head of the company's engineering department: "This line can handle any size container currently on the market, can fill perfume or cologne in any desired manner at room temperature, and can offer close tolerance filling in either refrigerated or two-stage pressure filling. Designed to operate at 60 units per minute, the line will soon be modified to double its speed. In the left background of the photograph are the large capacity, refrigerated tanks (covered with insulation) which can hold product, propellant, or mix at —40°. In the center is the stainless steel refrigerated electromatic compartmental filler bowl designed for one or two stage filling of the product and propellant.

Amic Heads Fragrance Firm

Roure-Bertrand Fils et Justin DuPont, Grasse, France, parent company of Roure-DuPont Inc. and a major world producer of essential oils, aromatic chemicals, and perfume bases, last month elected Louis Amic as president and chief executive officer. He replaces Jean Fabre, who died earlier this year.

Louis Amic

Former managing director of the company, Mr. Amic is well-known in the U. S. and in other countries.

•

Revlon Lawsuit Is Dropped

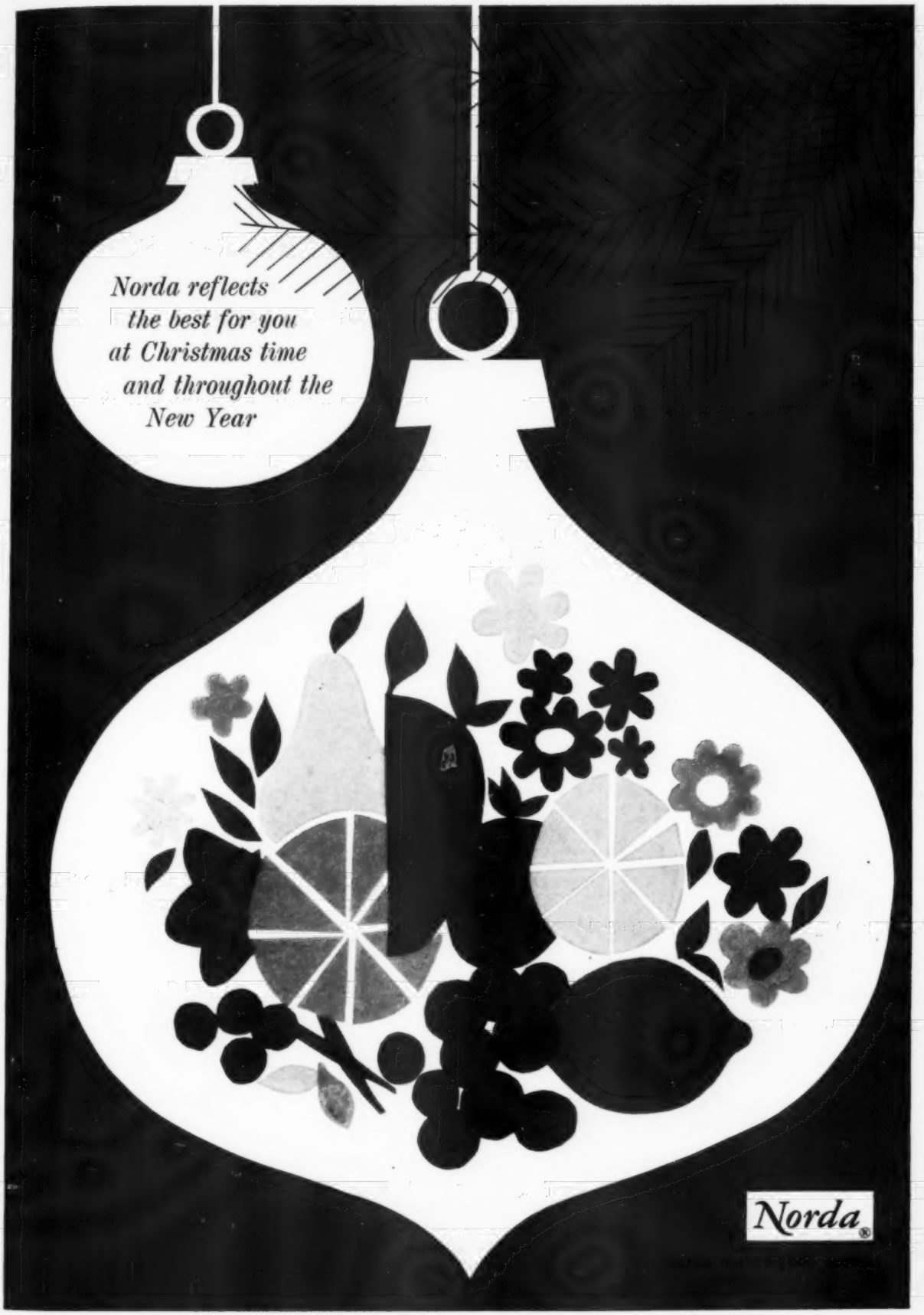
In answer to inquiries after the New York State Supreme Court was notified of discontinuance of certain lawsuits, Revlon, Inc. issued the following statement:

"The lawsuits, filed by Martin Revson, were discontinued to the satisfaction of all parties concerned. The suits, discontinued, were filed in New York Supreme Court in December, 1959 and July, 1960."

•

Crompton-Knowles Buys Co.

Crompton & Knowles Corp., Worcester, Mass., manufacturer of aerosol labeling machines, has merged the F. B. Redington Co., of Bellwood, Ill. into its Packaging Machinery Division. Acquisition of the Redington firm, which manufactures automatic cartoning and wrapping machines, makes Crompton and Knowles "one of the nation's six largest manufacturers of packaging machinery," the company claims. Redington will continue to operate in Bellwood.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CSMA Insecticide Division Proposes Consumer Campaign

AN educational program to "better inform the public of the many benefits they receive from the use of insecticides" has been proposed by the Insecticide Division of the Chemical Specialties Manufacturers Association and has been approved by the Board of Governors. The program, to be financed by a membership subscription fund, calls for supplying a minimum of 1000 flannelboard kits on the control of flying household insects to the extension workers of the U. S. Dept. of Agriculture and the U. S. Public Health Service. The kits will be used by speakers in addresses before women's clubs, service clubs, 4-H clubs, and on local radio and television programs.

According to the Insecticide Division's Education Program the project will include:

1. Life history of pests and a brief outline of areas of propagation, rate of multiplication, etc.
2. Control measures other than chemical, i. e., sanitation, use of proper screening, etc.
3. Lists of all insecticide compounds approved for household application. No effort will be made to promote specific ingredients or proprietary products.
4. Directions for proper use of conventional sprays, aerosols, pressurized sprays, including the mention of suitable sprayer types.
5. Importance of reading labels. Pointing out that all labels must be registered with the United States Department of Agriculture before the product is approved for sale.
6. Emphasis to be placed on safe and storage.
7. Contributors to the project will be listed in the script.

If successful in its aims, the program is expected to increase the use of household insecticides, overcome the adverse publicity sometimes associated with insecticides, give free publicity to program, and create better relationships with those responsible for advisory and regulatory activities.

Container Price Rise Seen

American Can Co.,'s Canco Division told the *Wall Street Journal* last month that prices of its metal containers will be "slightly higher" in 1961, and that the new prices will reflect higher costs. The prices named will be firm for 1961, American said, except for any increases in the price of plate or further increases in freight. Although aerosol containers were not specified in the announcement, it has usually been the practice among can producers to raise the price of such containers whenever the price of other specialty containers goes up.

•

Wheaton Makes Sales Shift

The T. C. Wheaton Co., Millville, N. J., manufacturer of coated glass aerosol container, last month announced a number of changes in its sales organization. Robert J. Shiels, formerly in the Chicago office, has been moved to Indianapolis and will work from 950 Forest Blvd., South Drive, Indianapolis. Succeeding him in Chicago will be Thomas Leonard, who had been in sales service at the main office in Millville. Donald Coatney was named salesman for St. Paul and Kenneth Glynn was appointed salesman for Philadelphia.

•

CSMA to Honor MacNair

Ira P. MacNair, president of MacNair-Dorland Co., New York, publisher of *Soap & Chemical Specialties* Magazine, has been named to receive the 1960 Achievement Award of the Chemical Specialties Manufacturers Association. The award, presented in the form of a scroll, will be presented at the CSMA's annual meeting in December at Hollywood Beach, Fla. The basis of the award is "distinguished service to the chemical specialties industry."

•

USDA's Dr. W. G. Reed Dies

Dr. W. G. Reed, former chief of the Pesticide Control Section of the United States Department of Agriculture, died in October at the age of 65. Dr. Reed, an honorary member of the CSMA for several years, retired in 1957. He had been chief of the Section since 1945 and connected with USDA since 1929.

Spectacular in selling perfumes
Available for profitable new applications

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TRADEMARK

Purse-size aerosol

Get that important competitive edge with this glamorous dispenser... multiply sales by having your customers carry and use your product away from home!!

Refillable—long cap to prevent accidental activation—can be printed with your own designs—available in highly polished brass cap, plastic or low-cost coated paper tube.

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Inhalants
Topical Antibiotics
Prescription items
Burn Preparations
Poison Ivy Remedies
Spray Bandages
Mouth Washes
Deodorants
Talcum Sprays
Hair Sprays
Athlete's Foot Remedies
and of course—*Perfumes!*

Then You Can Use Touch-N-Spray Profitably

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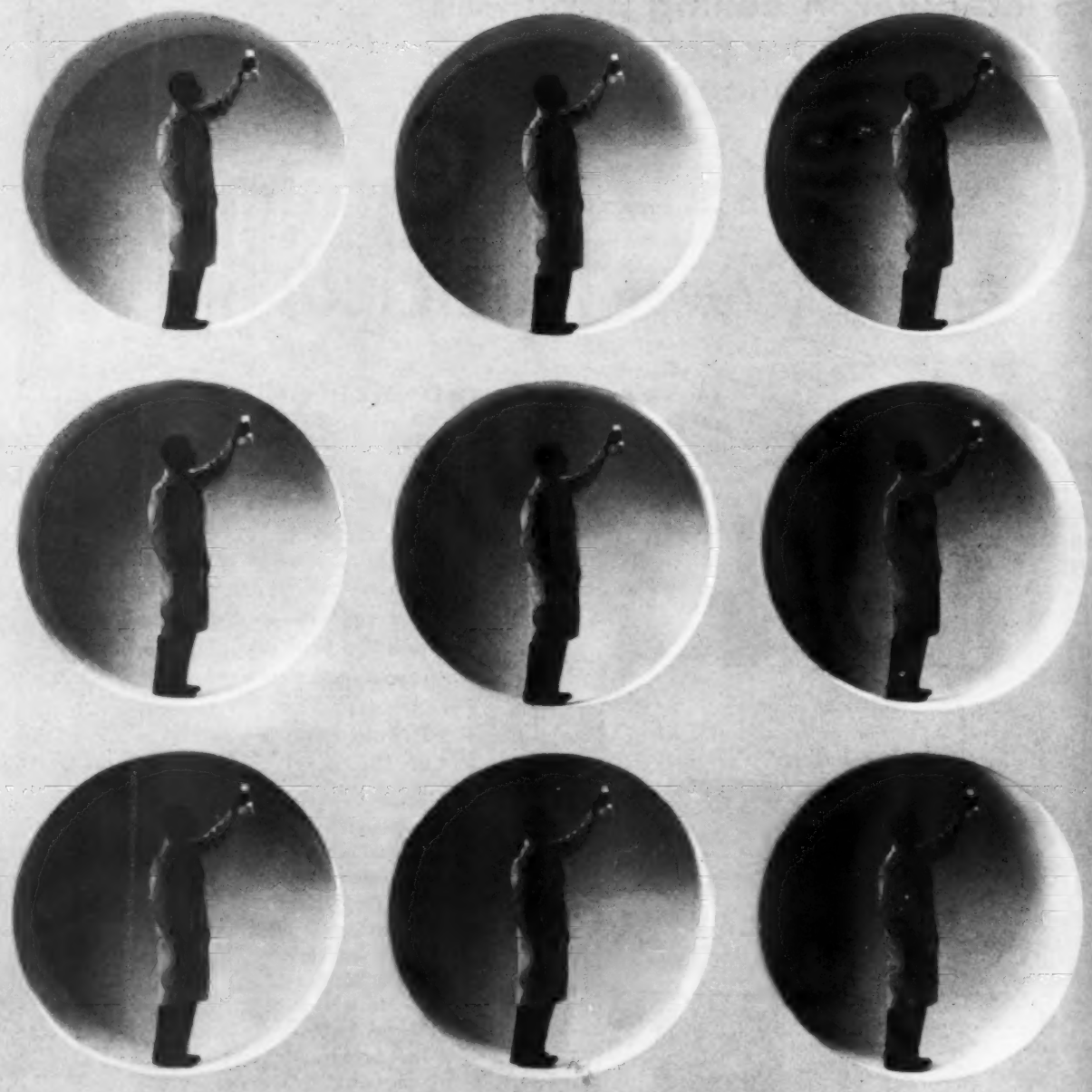

The extras in your Felton fragrance

...are Felton people! They give you their years of accumulated experience and knowledge...talent...flair...strong personal effort...*a complete extra department for you.* The costs are Felton's; the benefits are yours. Take advantage of them.

Felton Chemical Co., Inc.

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Sales offices and plants in major cities, Canada and overseas

Colgate-Palmolive Begins Work on New Research Center

THE Colgate-Palmolive Co., New York, last month announced the start of construction of a multi-million-dollar research center adjacent to the Rutgers University Science Campus near New Brunswick, N. J. Planned as one of the most modern research installations in the United States, the two-story center will cover more than 200,000 square feet—with provision for future expansion. It is being constructed on a 75-acre tract in Piscataway Township overlooking the Raritan River and New Brunswick.

When completed in the Spring of 1962, the building will house the Colgate-Palmolive scientists working in such fields as biology, oral health, pharmacology, biochemistry, physiology, enzymology and bacteriology. Much of the company's long-range, fundamental studies will be undertaken there, as well as part of its product development work.

Designed by the architectural firm of Eggers and Higgins, the Colgate-Palmolive Research Center will have a glass, ceramic and aluminum exterior with a frontage of 360 feet. There will be two main laboratory wings extending to the rear, each 250 feet long. To the front of the building will be three smaller wings occupied by the administrative offices, the information center and a dining area. The plans call for about 175 laboratory units, a 20,000-volume library and a seminar room that will accommodate 200 people.

Purchased from Rutgers University, the wooded site is on the western border of the university's Science Campus. This campus ultimately will be one of the largest of its type in the country.

Acrolite Wins Court Decision

Acrolite Products, Inc., Rahway, N. J., marketer of aerosol products, last month won a trademark contest with E. I. du Pont de Nemours & Co., Wilmington, Del. in the United States District Court in Newark, N. J. The case hinged on the similarity between DuPont's "Pro-tek" and Acrolite's "Pro-tex-A-Hand" and "Protect-A-Hand," both hand creams, with DuPont, the plaintiff, arguing that the Acrolite name was too close to DuPont's in name and purpose. Acrolite's products are aerosol foams.

Judge Thomas F. Meaney ruled that "there is no unfair competition by the defendant in the use of the vocable 'Protect' as part of the trade name of its shielding cream." He said that "Protect" has "consistently been recognized as a descriptive word, and whatever rights to the designation "Pro-Tek", given by its registration, could *not* be extended to prevent the use of the descriptive word 'Protect' where the word does actually describe the purpose and effect of the product which uses the term on its label."

•

Overbey Named by Pennsalt

Charles I. Overbey, former process engineer in the "Isotron" department of Pennsalt Chemicals Corp., Philadelphia, has been transferred to become superintendent of the Penn-Olin plant at Calvert City, Ky. Penn-Olin is a joint venture of Pennsalt and Olin-Mathieson Chemical Corp. to manufacture chlorates.

Jerry Don Swift will replace Mr. Overbey as process engineer for "Isotrons."

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Manufacturers with the out-in-front products specify ACTION PLASTICS dip tubing more than any other brand. The reason is obvious to anyone who has experienced our consistently reliable performance.
We make more than 150 different tube types ... in varying diameters, wall thicknesses or formulations.
Write for free samples and recommendations.
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Subsidiary of Colorite Plastics of New Jersey, Inc.

PMMI Re-Elects Hollidge

The Packaging Machinery Manufacturers Institute, 34-year-old national association of packaging machinery builders, elected officers for the year 1961 at its 28th annual meeting in Gaylord, Mich.

Re-elected were: president, Kenneth B. Hollidge, executive vice president of Arthur Colton Co.; first vice president William R. Huguenin, division manager, Packaging Machinery Division, Food Machinery Corp.; second vice president, Harold Mosedale, Jr., vice president-sales, Package Machinery Co.; third vice president, William W. Anthony, Jr., vice president and executive general manager, Crompton and Knowles Packaging Corp.; and Russell L. Sears as the Institute's executive director, secretary and treasurer.

New Directors of the Institute elected at the meeting include Donald Branning, general manager, American Broach and Machine Division, Sundstrand Machine Tool Corp.; Lewis R. Muskat, chairman of the board, Triangle Package Machinery Co.; and Kendall Doble, Jr., president, Pneumatic Scale Corp.

Among the subjects discussed at the meeting were plans for the Institute's Show which will be held in Cobo Hall in Detroit from Nov. 7-10, 1961. Third vice president William Anthony is serving as show chairman. At the meeting the Institute voted into membership eight additional builders of packaging machinery, bringing total current membership to 80 companies.

•

St. John's Sets. Pharm. Cong.

St. John's University's annual Congress for Pharmacists will be held on Friday, March 17, 1961, at the university's Jamaica Campus, it has been announced by Dr. Andrew J. Bartilucci, Dean of the College of Pharmacy. All those in the pharmaceutical field are invited to broaden their knowledge and to share in a discussion of problems facing the profession by participating in the all-day symposium, Dr. Bartilucci added. The Pharmacy Congress is one of a series of educational programs conducted by St. John's University for the benefit of the general public. The last congress was attended by professionals in the areas of hospital pharmacy, community pharmacy, industrial pharmacy and medical detailing, the dean said.

•

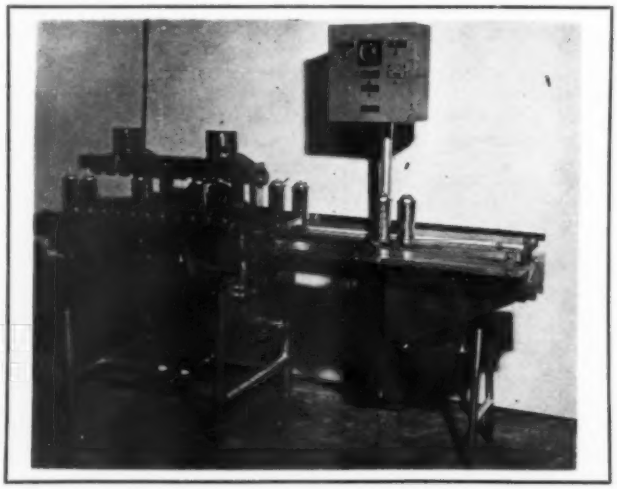
D&O Christmas Display

The aerosol laboratories of Dodge & Olcott, Inc., New York, have set up this Christmas display of aerosol perfumes and colognes for the Holiday Season.

LEMAY GASSERS AND GASSER-SHAKERS

LEMAY gassers have been in use by leading pressure packaging firms since 1948. LEMAY gassers are gaining popularity every year with Aerosol Packagers. With LEMAY you are assured of quality that has been proven by the test of time.

The fast accurate operation of the LEMAY gasser plus the fact that it is entirely automatic and requires no attendant means important savings in the cost of packaging. The unit is easily adjusted to accommodate various containers.



OUR 13th YEAR IN PRESSURE PACKAGING MACHINERY

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WRITE, PHONE OR WIRE
US FOR COMPLETE DETAILS

equipment processes bulletins

New Glass Bottle Overcaps

To complement the glass aerosol containers and provide maximum cap strength, two new gold overcaps have been introduced by the Walter Frank Organization, package engineers and designers of Hillside, Ill. The first of the caps, available in either brass or aluminum, is an extra-height straight-sided cylinder recommended for use with highly decorated containers. The second, also in either brass or gold, features an extra wide reverse flare to give a cosmetic touch to container decoration.

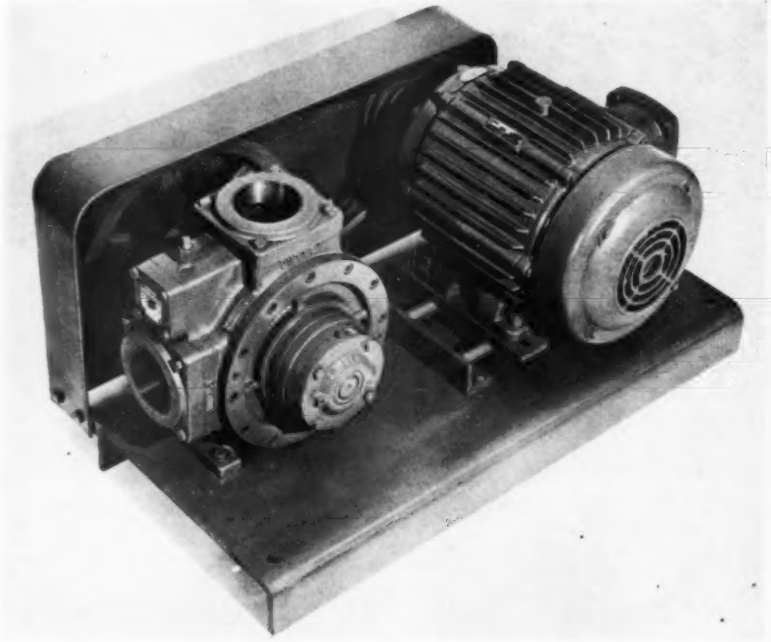
Each of the caps can be had in bright or satin gold finish. A wide variety of banding and enameled decorative effects is also offered. Special metallic finishes are available. Further information may be obtained from the company at 4100 Warren Ave., Hillside, Ill.

•

Anchor Makes New Tubing

Extruded polycarbonate tubing is now available from Anchor Plastics Co., Long Island City, N. Y., custom extruders. The new General Electric material, trade-marked "Lexan," has been successfully extruded in diameters over 1" and with wall thicknesses over .100". Tubing diameters which can be ordered range from .040" to 1½", and wall thicknesses from .015" to .125". Samples of previously extruded tubing are available to designers intending to use the new material. Samples may be obtained from the company at 36-36 36th St., Long Island City 6, N. Y.

New Line of Propellant Pumps Is Announced



New features of special value to the Aerosol Industry have been incorporated in Corken "Coro-Vane" pumps. The manufacturer has just announced an improved free-floating rotor and shaft assembly, which permits machining to closer clearances, with consequent higher differential pressures for hard-to-fill containers, and more capacity, for speedier delivery. The "Coro-Vane" line includes models suitable for filling containers as well as pumps for high capacity liquid transfer.

The unit is a positive displacement type pump, with hydraulically actuated vanes. Its design is said to make it singularly quiet in operation, and long lasting, with economical replacement of parts which may eventually show effects of wear.

In addition to the new rotor and shaft assembly, an improved mechanical seal has just been announced by the company. The new seal has two external "O"-rings, besides an inside "V"-type Teflon ring, for maximum protection against leaking. The unit is manufactured of ductile iron, for extra strength. It is also available in stainless steel or aluminum.

Coro-Vane pumps are engineered and manufactured by Corken's, Inc., Oklahoma City, Okla. The company also makes compressors.

KING SIZE AEROSOL DISPOSABLE CONTAINERS

Left to right—TMC 2, 3, 10 and 5 lb. King Size Disposable Aerosol Containers

BIG Packages that are Opening Up BIG New Markets

▶ Now YOU can make Aerosol sales-building advantages work for you in a BIG way.

You can now sell your product in pounds, quarts and gallons by using TMC King Size Disposable Containers.

They move more of your products...at more dollars per unit of sale...to more users...in consumer, commercial, industrial, institutional and many other volume fields.

In addition,—they give design engineers a new basis for new products such as oxygen resuscitators, fire extinguishers, torches, lanterns, camp stoves and other items selling to volume markets.

TMC Disposable Containers are made in a wide range of sizes and shapes for working pressures including 240 psi and 1800 psi in conformance with ICC specifications.

A letter or phone call NX 3–7900 will bring you information based on broad field experience in serving many industries.

TUBE MANIFOLD
CORPORATION

419 BRYANT STREET N. TONAWANDA, N. Y.

Automatic Product Filler

National Instrument Co., 2701 Rockwood Ave., Baltimore 15, Md., recently announced a new model of its "Filamatic" volumetric product filler. Called the "DRB-16," the unit will fill up to 40 16-ounce aerosol containers per minute by either the pressure or cold filling method. It may be installed on new or existing aerosol lines by attaching a microswitch actuator to the conveyor, so that the fill is automatically initiated each time the container depresses the microswitch. Accuracy of fill is reported to be "better than 1%."

The unit may also be used as a portable filler for volumetric filling of plastic, glass or metal containers, of up to 32 ounces in size. Interchangeable pump units adapt the "DRB-16" for dispensing volumes as small as 1/20th of an ounce. All liquid contacting parts are fabricated of Type 18-8 stainless steel and Teflon, and all moving parts rotate in self-lubricated bearings.

To use, the operator merely drops the inlet hose into a floor-level reservoir, sets the micrometric adjustment for the volume to be dispensed and the speed control to the filling rate desired. The fill cycle may be initiated by depressing a foot-switch contactor, or the unit will recycle continuously.

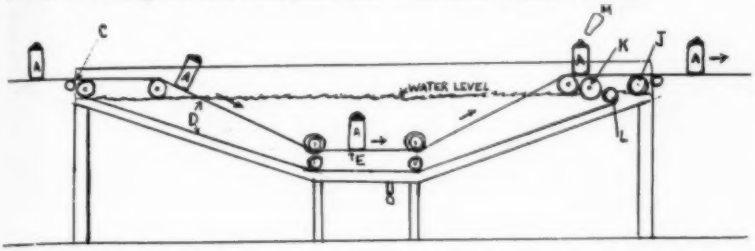
•

Builders Issues New Catalogue

Builders Sheet Metal Works, Inc., 108 Wooster Street, New York, last month issued a new catalogue describing its aerosol and laboratory equipment. Included in a special aerosol section are bottle cappers,

small-production cold fillers, dry ice coolers, can piercers, pressure testers, and a whole series of special laboratory and production equipment.

Wire Belting Is Developed for Aerosol Test Tanks



THE Wire Belt Co. of America, 19 River Street, Winchester, Mass., has developed a new version of its "Flat-Flex" wire belting as a substitute for the heavy conveyor belt currently being used in aerosol hot water test tanks. The belting, used in conjunction with magnets to hold the containers in place, consists of stainless-steel interlocking wire which as a unit may be positively driven with no slippage. According to the manufacturer, it can be easily shortened, lengthened or repaired and is thin enough so much lighter magnets can be used to hold the cans in place.

In the diagram above, the aerosol cans (A) are held onto the belt by magnets (E), while belt (D) carries them down the incline, through the hot water, and delivers them to conveyor. The conveyor framework and bearings can be mounted directly onto the tank or be made independent of it, and the permanent magnets should be fastened to the conveyor frame as close to the wire belt as possible. Drive gears approximately three inches in diameter (J) can be used to drive the belt. while rolls K and L are take-up rolls for the belt (also three to four inches in diameter). The company suggests that a one-third horsepower motor is enough for the drive. For cans with recessed tops, an air nozzle (M) is used to blow out the trapped water.

Aerosol Starch Formulations

A new group of starch specialties for aerosol and spray-on liquid laundry starches has been announced by National Starch and Chemical Corp. Said to be ideal for light starching of wash 'n wear fabrics, the new specialties are referred to as "Aero-Spray Starches." Key advantage, according to National, is prolonged stability that prevents jelling, settling and clogging of spray nozzles. Solutions of the starches are said to remain thin for spraying at approximately 5% solids, yet produce satisfactory crispness comparable to customary dilutions of ordinary laundry starch.

Three grades of "Aero-Spray Starches" are currently available: one that requires cooking; another that is pre-cooked; and a third that is pre-cooked and offered in concentrated liquid form. Suggested formulas and technical information are available upon request from National Starch and Chemical Corp., 750 Third Avenue, New York 17.

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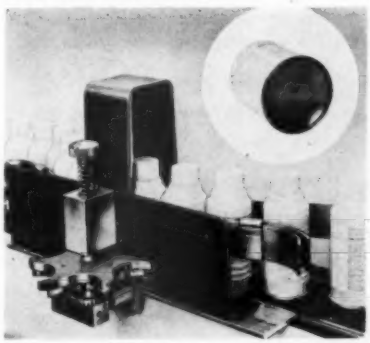
New Aerosol Coder



A new self-powered conveyor attachment for automatically marking codes, prices, etc., on the bottom of aerosol and other round containers has been introduced by Adolph

Alpine

NEW
Fragrances
and
Neutral Scents for
Aerosol Products Are
Continually Developed
in Our Modern
Aerosol Laboratory

Specialists in
Aerosol Fragrances
Try Our Quality Products
and Prompt Service.

ALPINE
AROMATICS
INCORPORATED
Metuchen, N. J.

Gottscho, Inc., Hillside, N. J. Identified as the "Sideline Markocoder Attachment," the coder is described as a simple, inexpensive and compact unit that is easy to install on any can conveyor. It is driven by the product stream, and operates at normal line rates. The "Sideline Markocoder" was originally developed by J. C. L. Engineering Co. of Los Angeles, from whom the Gottscho firm recently purchased the patent, manufacturing and selling rights.

Bulletin "SLM," describing the "Sideline Markocoder," is available from Adolph Gottscho, Inc., Hillside 5, N. J.

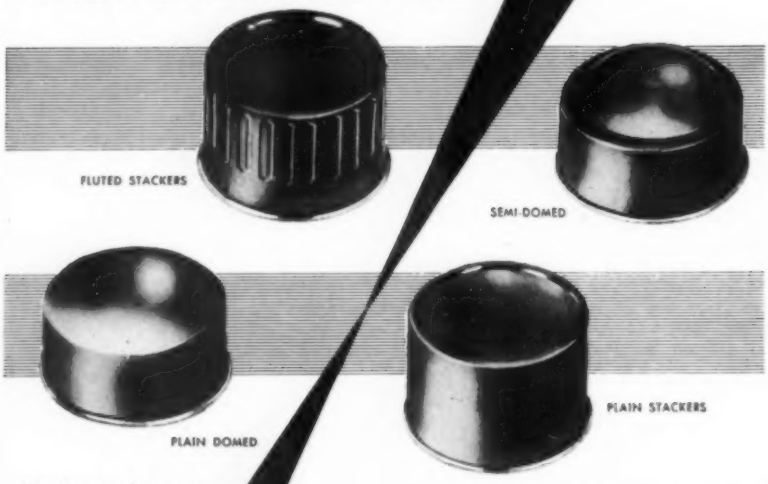
•

Rhodia to Make Vanillin

Plans to begin production of high-quality Ethyl Vanillin by a new process have been disclosed by Rhodia, Inc., New York aromatics and essential oils producer. Used in the food processing industry, the material is a synthetic vanilla.

NOW...

SUPERIOR SERVICE for the AEROSOL INDUSTRY



We also manufacture tin plate Screw Caps from 18mm to 120mm.

PENN, known for finest service to the bottling industry for over 25 years, is now making tops for aerosol containers.

All of Penn's customers receive superior service and careful attention on every order. You are assured of top quality workmanship, the right price and immediate delivery.

Call or write for information.

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Alfco Announces New Handle

A new metal-and-plastic aerosol spray can handle that converts any size aerosol can to a professional spray gun is being marketed by Alfco, Inc., Culver City, Calif. The new handle has rugged, operating features, and will retail at 49 cents.

The new snap-on device is recommended by Alfco to manufacturers and marketers of aerosol products as a companion piece to boost sales and eliminate any customer objections to the use of aerosol products. The handles may be private-labeled in the recessed portion of the grip for promotional tie-in with manufacturer's own aerosol product. The handle is quickly detachable for use with aerosol products such as household paints, insecticides, window cleaners, hair sprays, moth sprays, etc. The trigger action of the handle is said to eliminate hand fatigue, maintains even, accurate spray application and keeps hands clean. The unit is also reported to facilitate positive directional control of spray. Even pressure on the push-button maintains a consistent degree of application, and increases labor efficiency in industrial uses such as lubricants and mold release compounds.

More information and price lists to wholesalers and manufacturers may be obtained from the company at 4950 South Sepulveda Blvd., Culver City, Calif.

•

Carbide Lists Ether Booklet

A new 40-page booklet describing the properties and uses of ethers and glycol diethers has just been published by Union Carbide Chemicals Co., New York. It contains comprehensive data on ethyl ether, isopropyl ether, and 1,0-dioxane and the gly-

col diethers; diethyl Carbitol, dibutyl Carbitol, and methyl ethyl Carbitol. Included is information on physical properties, solubilities, specification limits, test methods, storage, handling, shipping, physiological properties, and selected literature references.

•

Lethane Approved by USDA

The U.S. Dept. of Agriculture has accepted extensive residue tests conducted by Rohm & Haas Co., Philadelphia, as satisfactory evidence that Lethane thiocyanate compound may be used safely as a toxicant for the control of hornflies, stable flies, mosquitoes and gnats on dairy cattle. The conditions of use specified by the USDA are as follows:

> "Not more than ½ ounce of a 3.5% spray (6% Lethane 384 by volume) per adult animal twice daily. Apply evenly over upper neck, back and rump. Do not wet hide. Avoid spraying udders, eyes, mouth; feed or drinking troughs; or milk buckets and equipment directly contacting milk."

Lethane was developed by Rohm & Haas in the 1920's as the first organic insecticide to be manufactured by chemical synthesis. The insecticide is used widely in household fly sprays and is employed as a toxicant and knockdown agent. The USDA report indicates that Lethane is also considered free of toxic hazard for beef cattle and hogs.

•

Spanish Plant Nears Completion

Construction of the plant of Givaudan Iberica S.A., newest member of the Givaudan international organization, is nearing completion. The new factory is being erected at San Celoni, about 35 miles from Barcelona and will be ready for production early in 1961. The plant will consist of a series of buildings which will house administrative offices, laboratories and production facilities. The first products to be produced will include isolates and derivatives of citronella oil and oil bois de rose; benzyl esters; the nitro musks; phenyl ethyl alcohol; the ionones and the methyl ionones.

Davis Is Named Revlon VP

Lewis C. Davis, former president of Bonwit-Teller, Philadelphia, has joined Revlon, Inc., as vice president in charge of the company's department and specialty store division. At the same time Revlon announced the appointment of Miss Katherine Vincent as director of consumer relations. Both moves are regarded as aimed at strengthening Revlon's customer services in these areas.

Mr. Davis, who was associated with Bonwit-Teller from 1949 to 1958, most recently had been senior vice president of Rayco, Inc., Paramus, N. J. Prior to his association with Bonwit-Teller he was sales manager of Halle Bros. Co., Cleveland, from 1946 to 1949, and was divisional merchandise manager of Marshall Field & Co., Chicago, from 1940 to 1946.

Miss Vincent was administrator and director of public relations at Macy's, New York, and prior to that was an advertising and promotion consultant in the fashion field and fashion and women's editor of the *New York Herald-Tribune*. She also had been a staff associate of the American Child Health Association, and was women's editor of the *Los Angeles Daily News* and the *Philadelphia Daily News*. At Revlon she will be primarily responsible for Revlon consumer services through department stores.

•

Portuguese Packaging Show

Portugal will hold its first packaging show next year. Scheduled for March 12-26 in Lisbon, the First Portuguese Packaging Show is designed to give Portuguese Industry "practical opportunities for procuring information on the growth of packaging and packing techniques throughout the world." 1200 of the 7000 square meters of floor space for the show will be devoted to an educational display explaining new packages in Europe and the U.S. Details of the show may be obtained from EMBA Technical Bureau, 3 Rue La Boetie, Paris 8, France.

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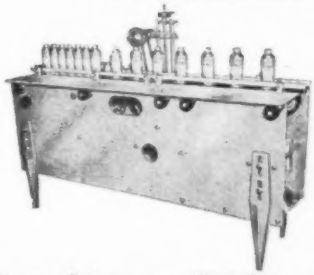
AEROSOL CODE DATING EQUIPMENT
that has *earned* industry acceptance



POWER DRIVEN CODER

With work table area.
For automatic code dating of concave bottoms of aerosol cans.
Will mark top, bottom, or both at the same time.
No change parts needed

Something new has been added . . .

CASE CODE DATER
with Kiwi built-in rubber band type.

- No loose type to become lost
- Ink just once per shift
- Never needs cleaning
- Inker never dries out
- Prints in the same place on every case

Also . . .
case printers for consecutive numbering or printing information on cases

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that have proved their effectiveness in the production of the best selling industrial and consumer products

- MINT BOUQUET no. 3121
- APPLE BLOSSOM no. 3122
- OIL SWEET PEA no. 3123
- OIL WISTARIA no. 3124
- OIL GARDENIA no. 3125
- OIL BOUQUET E.T. no. 3126
- OIL BOUQUET P.C. no. 3127
- OIL BOUQUET H.D. no. 3128
- OIL BOUQUET K.L. no. 3129
- OIL BOUQUET H.C.S. no. 3130
- OIL BOUQUET FLORAL no. 3576

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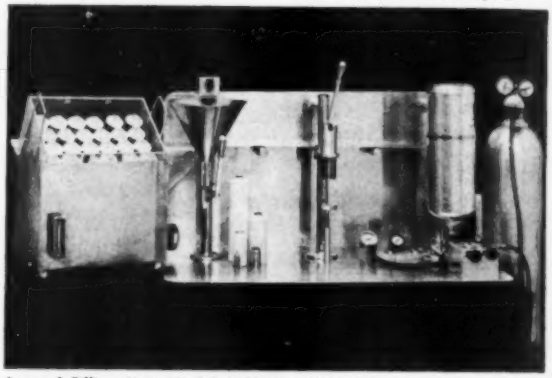
aerosol loading for under $400

model 1000-m, including: gasser, filler, crimper, pressure tester, support rack and shelf $397.50
FOB West Palm Beach, Fla.



Aerosol Filling Unit Model 1000-M with leak test tank & accessories

IDEAL FOR LABORATORY or SHORT RUN PRODUCTION

Accessories and Cost:			
Bottle Crimper	$189.50	Can Crimper (manual)	$159.50
Nitrogen Regulator	47.00	Agitator	34.50
Leak Test Tank (stainless steel)	179.50	Nitrogen Connecting Hose	4.50
Scale	22.50	Valve Adapters (specify)	4.00
		Propellant Rack (holds five 25 lb. cyls.)	225.00

Now You Can Fill Using:

FLUOROCARBON, NITROGEN AND CO_2 PROPELLANTS

. . . The Pressure Pak Model 1000-M with accessories is fully capable of performing all aerosol loading tasks required in laboratory development and short run production. Constructed primarily of stainless steel and aluminum, the Pressure Pak 1000-M requires only eight square feet of space for set up.

TECHNICAL AID AVAILABLE: The engineering department of Pressure Pak will furnish technical assistance on general formulation and aid in locating sources of supply for components upon request There is no charge for this service.

DIRECT ORDERS AND INQUIRIES TO: Dept. A-1

Pressure Pak, inc.
420 Monceaux Road **West Palm Beach, Fla.**

Dutch Firm Seeks Can License

A licensing agreement with a U.S. company for the manufacture of aluminum aerosol containers, crown caps, and other aluminum products is being sought by J. & K. Smit's Scheepswerven, N.V. 6 Smitweg, Kinderkink, Netherlands. Originally established as a shipbuilding yard, the company now has an aluminum processing plant which sprang out of its manufacture of boilers and other machinery used in shipbuilding. The company sells throughout the European Common Market area.

Foreign Matter

(*From Page* 43)

After the vacuum has been used to remove all foreign matter in the cans, the sealing cups are raised from the cans and the indexing chain moves the next line of cans to the cleaning position.

The automatic cycling of the line and the fast action of the controlling valves enable Connecticut Chemicals to fill cans on this line at the rate of 120 cans per minute.★

Argentine Aerosols

(*From Page* 84)

have on the all-important price factor, Sr. Ravenna counts on this to give the market a substantial push upward. Also, he suggests that current Argentine formulation work with the liquefied petroleum and compressed gas propellants could go far toward at least partial alleviation of the cost problem. He reported that Argentinians generally seem well pleased with the pressurized package, and that magazine and television advertising has alerted the general public to the benefits of the package.

"With a population of 23 million, we believe Argentina is ready to support a growing aerosol market. Once the price factor is improved, I think the market should easily quadruple in size."★

Past, Present and Future

(*From Page* 4)

ing the wide range of aerosol products that are available to you today.

Of course, as you know, fortune occasionally plays a part in any kind of development.

For instance, the beer can we were manufacturing for *Budweiser* and other firms back in 1946 had simple, fundamental shape. But it had one tremendous advantage when we began looking around for a container that would withstand the pressures needed in loading an effective civilian version of the Army's "G.I. Bug Bomb." It was a drawn steel can, the only one of its type on the market. It couldn't split, as a fabricated can might. And when it was fitted with a suitable valve and dip tube, the new aerosol industry was born.

On November first of 1946, according to an invoice still in the company's files, the first history-making cargo of aerosol cans was shipped to the pioneer among fillers, Aerosol, Inc., of Neodesha, Kan. By the end of the following year, a full dozen fillers were in the field and, thanks to the development of a highly effective aerosol valve by the Bridgeport Brass Co., total production in 1947 rose to 4 million 300 thousand units. In those early years, insecticides were the principal product, but it wasn't long before room deodorants, moth-proofers, and lacquers were added to the list. Total production in 1948 rose to almost 10 million units.

The year 1949 saw the marketing of the first aerosol hair spray and that was also the year in which contract fillers, the people who play so vital a role in the great Canadian industry, made their first substantial impact on the North American market. They helped the booming aerosol business to double its output once again to *20* million units. The years of the decade since 1950, how-

ever, have brought the real breakthroughs in aerosols to date.

By 1951, the contract fillers had established their position in this growing field and filled over 50% of the annual '51 total of 40 million units. Their knowledge and energies are continually being directed toward the improvement of the existing methods and equipment.

AEROSOL shave lather appeared on the market in 1951. There was no stampede to discard the brush and the razor strap but, in a period of less than two years, every major company in the shave cream business had embraced aerosol lather as an important volume item. Aerosol snow made its first appearance and, although it is estimated that during the Christmas season of 1951 there were *more children sprayed than trees*, this dramatic development reached 10 million units in 1959.

The other challenges faced by the industry have been many, as new production records are achieved each year. It has been necessary to develop cans with linings and coatings that would permit fruit products and toppings to retain their original flavor; propellants that would mingle sufficiently with certain products to atomize them and yet remain independent of others; propellants that would retain their expansive power down to the last cubic inch of interior can space and yet not freeze or contaminate the product they were intended to eject; and valves that would remain dependable and free-flowing throughout the life of the packaged product.

The remarkable thing about this industry—and I think we should all be extremely proud of it— is the way in which fillers, valve and container manufacturers, marketers, and other specialists have pooled their efforts. Few other industries in Canada or the U.S.—I think you'll agree—can boast of the cooperative spirit of the aerosol industry, in which intense competitiveness is subordinate to the realization that, only by common contributions, will all of us prosper. As a result of this unusual situation, the aerosol industry today stands on the threshold of developments which should make us doubly proud to be partners in an industry so forward-looking and so essential to the convenience of our fellow citizens.

In man's exploration of space, self-puncturing aerosol cans are already standard equipment within the scientific rockets to help maintain the proper atmospheric conditions for delicate instruments. In the space travel of the future, where conditions of weightlessness will make it impossible for passengers to keep food on their plates, or coffee in a cup, it seems certain that some type of pressurized containers will be used for feeding human astronauts on their way to Mars.

To get back to earth, and to the present, probably the key development that will make it possible for the industry to give housewives truly "workless" meals in the form of pressure packaged foodstuffs is Du Pont's new propellant—identified as "Freon C-318." This propel-

APPLY MORE THAN
100 AEROSOL VALVES PER MINUTE
WITH THE CAPEM H-O-FV

If applying aerosol valves is a bottleneck in your packaging operation, here is your solution—the CAPEM H-O-FV.

Rich Products Corp., Buffalo, N. Y., manufacturers and distributors of Rich's "Whip Topping", recently installed one of these machines. Production has increased and results have been most satisfactory since installing the H-O-FV on their aerosol container line.

The Model H-O-FV sorts and applies aerosol valves to whipped cream containers at speeds in excess of 100 per minute. Stainless steel and chrome-plated parts are used whenever necessary to comply with dairy industry regulations. Electric switch gear is mounted conveniently above conveyor to facilitate washing the line at shut-down time.

Changeover from one container size to another is simple and easy.

For complete information on the CAPEM H-O-FV and other Consolidated packaging machinery, write Sales Manager, Consolidated Packaging Machinery Corp. [a subsidiary of International Paper Company] 1400 West Avenue, Buffalo 13, N.Y.

CAPEM

THE MODERN SCREW CAPPER

lant, now undergoing tests by the U. S. Food and Drug administration, is a more stable form of the present fluorinated hydrocarbon propellants.

While having many of the favorable characteristics of the common present-day propellants, such as nitrogen, CO_2, and nitrous oxide, "Freon C-318" has a number of them exclusively its own. When used in conjunction with a drawn can enclosing a pressure motivated piston, it will permit the use of the aerosol container in any position, even fully inverted. It eliminates the possibility of food contamination and freezing; and its uniform expansion ratio virtually guarantees efficient and complete emptying of the container. Its cost, for the moment, will keep "C-318" from being put to general aerosol use. Presently, it is out of the picture in packages where the product, such as an insecticide, requires atomizing. Nevertheless, now that the new propellant is out of the laboratories, we can count on it to open up new fields in pressurized packaging which have been denied to us until now. It is out best assurance that the real growth prospects of this industry lie immediately ahead.

Before we begin throwing our hats in the air, however, we must consider some of the challenges which await us in that immediate future. We are a long way from being as efficient in production as we must eventually become in order to maintain a respectable profit ratio.

Filling lines now operate at speeds of 60 to 150 units a minute. Beer and beverage plants, by way of contrast, now achieve filling speeds of up to 600 and 1,000 cans a minute. There was a time, however, not very long ago, when *their* speeds were no greater than the aerosol industry's present ones. I say this to point up one of the problems which all of us in the industry must help solve—just as we have cooperated in solving other problems of production, of marketing, and of standardization in the past.

It is now possible for fillers who use metered valves to load their propellants through the valve. This offers great promise of speeding up the lines, but faster techniques and faster machines for filling are still an urgent need.

Even without looking into the future, it is gratifying indeed to see that the aerosol industry, despite its headlong expansion, has constantly exercised the greatest pains in maintaining its reputation for integrity, for quality of product, and for fair dealing with its customers. For this, we compliment all segments of the industry, but in Canada I would single out for special merit the aerosol members of your association. Undoubtedly, among you, they are the mainstay of the industry.

The quality controls instituted and maintained by the Canadian fillers are equal to, and in some instances, *more* precise than those encountered in the industry in general. We should both thank them for this and emulate them; since the kind of reputation engendered by such practice pays off for all of us. There is good reason for stressing quality control. At the retail level, for instance, it is evident that determination of optimum shelf life and proper inventory control practices are vital in the marketing of pressure packaged foods.

Because the pressure package requires technical considerations other than those concerned with conventional packaging of food, technologists have had to abandon many conventional packaging ideas and consider much shorter shelf life, so that consumers can have foods in pressurized containers with all the inherent advantages of metal packages.

The fact that whipped cream and synthetic toppings, by way of example, have an optimum shelf life of only six to eight weeks has not affected their sales as accepted food specialities in the homes of our two nations. Packers of these products have developed strict inventory controls for successful packaging and handsome profits. To achieve this enviable position, rigorous education

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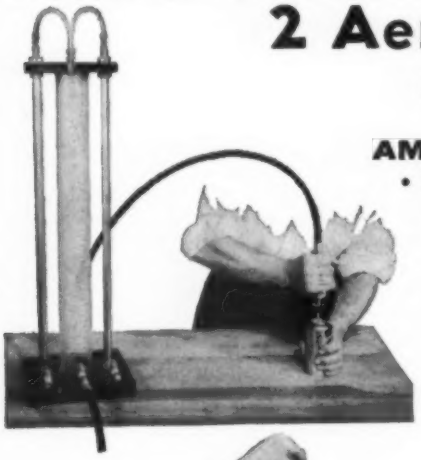

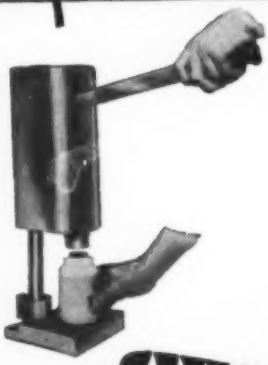

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of distributors and retail outlets was necessary. I need hardly point out to gentlemen in your position that a similar program of education and inventory controls will be vital to our future success as we move deeper into the field of pressure packed foodstuffs.

We have been writing for quite a few minutes now about the various members of our industry family without devoting much attention to the most important people of all—the men and women who make our successes possible—the retail *customers*. It is easy to get so wrapped up in technical problems that we forget we have only one genuine reason for existence; to put products into our customers' hands that will make life easier and more enjoyable for them. Measure your product in those terms and you can never go wrong.

In closing then, a word of warning that runs somewhat along the same lines. Being a very young industry; we are full of *big* ideas and hopes and aspirations, and there is very little risk as yet that we shall become institutionalized, or develop "hardening of the productive arteries." But there is a very real danger, as we get bigger and more people come into our field, that we shall tend to drift away from each other and begin to think of ourselves exclusively as fillers, marketers, or manufacturers of cans and valves. That we must guard against, for it would be tragic if it occurred. Not inly is each of us dependent on the products of all the others in our industry; not only must we work as interdependent members of a close-knit team; but we need most of all to develop and keep everlastingly in our minds the concept that we are in business principally for the *convenience* of our customers.

Does it make any real difference whether we are loading mustard or shave cream, or paint, or bug spray? Not at all. Does it make any difference that we are the ones who supply the valves, or the cans, or the products that go into them? Again, not at all. Each of us has a job to do *and in the doing of it* we are furnishing that customer of ours with ease of use, with minutes saved, with a short cut to enjoyment.

So the thing we have to sell (and nothing else) is *convenience* packaged and pressurized, and made handy in a can. Customers *love* convenience, even as you and I. Aerosol packaging is a convenience. Another name for convenience is "aerosol." Sell them together, and you can sell any product that goes into them.★

•

Dumas Milner Buys Cinderella

Controlling interest in Cinderella International, Orlando, Fla., retail cosmetic marketer, has been purchased by the Dumas Milner Corp., Jackson, Miss. The Milner firm markets a line of conventional and aerosol household products.

Does It Pay?

(*From Page* 40)

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been addressing a recent meeting of purchasing agents.

Machinery Obsolescence

Machinery or equipment obsolescence is an important factor in determining the costs of installation of any packaging line. There are more-or-less standard depreciation rates, which apply to most equipment and quite often these are the figures that are used in determining the yearly cost. However, the aerosol industry is *not* a normal one. It has not as yet reached the plateau level as new developments in products and packaging invariably lead to new and/or different types of equipment. The simple changing of a small protective overcap to the newer more popular large size can and does make automatic capping equipment obsolete overnight. The use of such new propellants as hydrocarbons or carbon dioxide create large unplanned expenditures. For example, in the past few months our company has had to spend over $85,000 for new equipment, *none* of which increased

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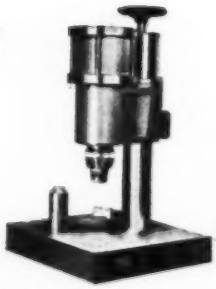
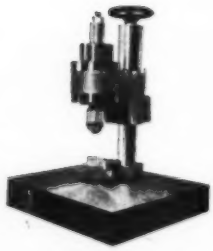
3. Propellant Pump WM-DP 385 Fully automatic, compressed air operated. Empties cylinders, mixes propellants, guarantees liquefaction.



4. Valve Clincher WM-DP 350 Semi-automatic, compressed air operated. Capacity: 28-30 per min.



5. Nitrogen Gasser WMP-DP 390 Semi-automatic, compressed air operated. Capacity: 28-30 per min.

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our production capacity. This amount was in addition to our normal capitalization for production capacity increase. All of these expenditures merely kept us abreast of a rapidly changing business and only a small portion of this was anticipated a year ago.

My point in mentioning the above is how can an engineer, who is essentially unfamiliar with the constant change in the aerosol industry, be able to predict that the beautiful new shiny equipment which he figures will operate for a period of eight years, may be obsolete say in a year or two? Any accountant can certainly point out the tremendous difference in the cost-per-unit if the useable life of the equipment does not come close to that anticipated. I believe that this area is probably the least understood of the most items entering into a decision to install captive facilities.

While discussing equipment, it should also be mentioned that most packaging engineers assume, perhaps justifiably, that when new equipment is received, it will perform in a satisfactory and expected manner. I wish this always were true. Practically without exception any large packager will state that after the equipment is installed, his own engineers and maintenance people have to rework and in some cases rebuild it. The equipment manufacturers have engineered many good pieces of equipment, but, unfortunately, too often sales departments are allowed to sell these equipment improvements before they are thoroughly tested. This leads to excessive delays in obtaining the equipment and getting it into efficient operation. Hence, another increased cost factor. Also, with few exceptions, the equipment for the aerosol industry is not "beefed-up" and until it is reinforced usually will not stand up for continuous multiple shift operation.

Until recently, very little attention was given to the time necessary to change-over the equipment from one product or size to another. This factor is probably more important to the contract than the captive filler.

Contract Filling Capacity

One reason often given for the installation of a firm's own filling facilities is a feeling that the company will be able to get production when it needs it. Undoubtedly this has been true in a few instances, but there must be something basically wrong, since in the United States, I venture to say that less than 50% of the contract packagers' facilities are being utilized! This figure is based on a single shift operation, and if multiple shift and overtime work is considered this percentage drops sharply.

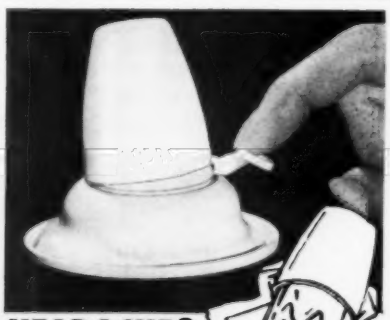
If no new production capacity is added (other than for repair or to handle new formulations), *there is already sufficient capacity to handle the anticipated aerosol volume five to ten years hence.* (This does not include a surge of pressurized food business). Does this mean that we are pessimistic about the growth of aerosols. Far from it, but it does point out that there is *too much* capacity available. Let's face it, the equipment manufacturers *have* done a good selling job. It is true that some fillers are busier than others, but isn't this true in any type of business.

In the States the fillers have tended to specialize. Some concentrate on paints, others on hair sprays, cosmetics, or pharmaceuticals. There are very few fillers who are equipped to handle the entire line of aerosol products.

Competition Among Contract Packagers

Contract packagers are sometimes their own worst enemies. By even hinting at the reliability of their competitors in talking to a prospect, they tend to cast a shadow on the entire group. Recently I read something which covers the situation very adeptly — it is entitled "Competition".

"Never malign your competitors. If it weren't for them you'd be either self-satisfied or broke. They



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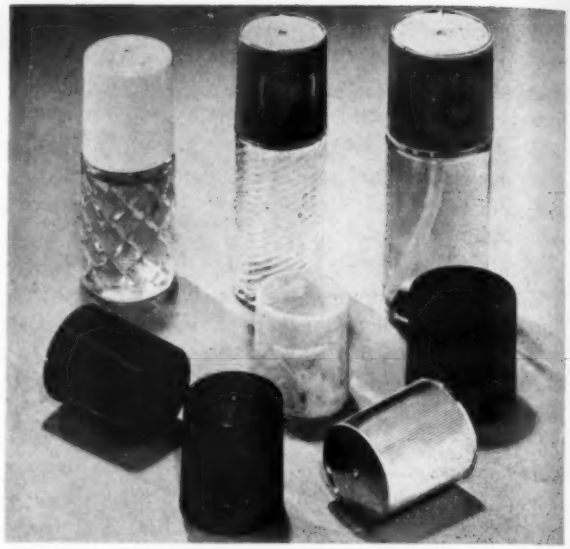

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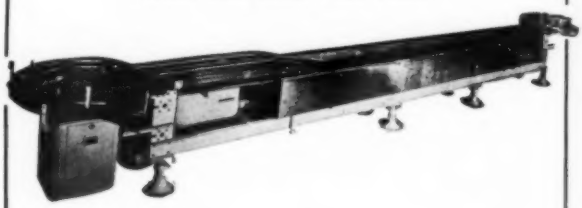

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It is hoped that no one has been offended by this discussion, but if any one's feelings have been ruffled, I assure you that it was entirely intentional. Despite all of the inherent problems, the contract filling industry is here to stay; primarily because it adheres to the growing business trend toward skilled specialization. ★

■

P&S Adopts IFF Name

Polak & Schwarz Internation NV, Dutch branch of International Flavors & Frangrances, Inc., New York, last month adopted the parent company's name. It will be henceforth known as "International Flavors & Frangrances IFF (Nederland) N.V." IFF, the result of a 1959 merger between van American - Haebler and Polak & Schwarz, is one of the leading producers of aromatic chemicals, fragrances, and flavors in the world.

CMCS Meeting

(*From Page* 38)

to the growth of the labor force or the national product, but "nails down" needed capital.

3. An increase in the amount of "hot money" in circulation, a factor he attributes to the current investment insecurity in Asia and Africa. "This causes a considerable amount of specie and cash to be drifting about looking for high interest rates or ready profits throughout the world.

"The basic economic trade policy of Canada has been to export all primary industry products possible and maintain an open door policy for the import of secondary manufacturing. The day for such a policy has passed, since the primary industries (lumber, minerals, agriculture) no longer offer an outlet for the employment of excess labor. The only logical field for expansion is secondary industry."

Gen. Simonds urged that something be done to expand the consumer market, which he pointed out is gradually shrinking as the work force declines. "Too often, the consumer tends to buy the best product at least price, regardless of the country of origin. Something must be done to encourage him to 'Buy Canada First'."

STILL another highlight of the CMCS meeting was a forum on pesticides, consisting of W. S. McLeod, supervisor of the Pesticide Unit, Feed, Fertilizer and Pesticide Section, Plant Products Division, Canada Dept. of Agriculture; C. V. Marshall, superintendent of laboratory at the Plant Products Division; and Dr. E. O. Hughes, public relations officer of the National Research Council.

Mr. McLeod reported that his department handled a new record number of pesticide registrations this year—3250. He advised that applications be well documented and include: (1) brand name descriptive of active ingredients; (2) statement of ingredients, to include concentration of solvents, toxic agents, perfumes, emulsifiers, etc.; (3) weight; (4) guarantee, to include "effective for purpose claimed."

For new pesticides he advised the inclusion of details of treatment, duplicacy of treatment, and treated and untreated checks. Also (1) effectiveness, preferably some comparison with a known standard; (2) margin of safety, preferably an LD rating substantiated by laboratory animal tests; (3) use precautions, including, in the case of household products, warnings concerning damage to furs, paints, rugs, etc.

Mr. Marshall reported there is a

pronounced increase in his laboratory in the use of analytical instrumentation, particularly spectroscopy and gas chromatography. He cautioned that carriers once thought of as harmless may chemically change the toxic material to add to its toxicity for humans or animals.

Dr. Hughes reported a tremendous rise for research expenditures in Canada. From 1949 to 1959, the population has risen 60%, the gross national product has tripled, and the amount of money spent on research has multiplied by 25 times. He credited a large portion of this increase to a rise in business activity by U.S. and British firms in Canada, an improvement in colleges, and an increase in the number of Canadian firms engaging in research.★

Packaging Institute

(*From Page* 45)

the actual filling operations, and capping, coding, and labeling operations after the filling operation.

Carl D. Schoby, manager of package development and design for Armour and Co., Chicago, told the Forum that "unplanned obsolescence is taking its toll of packages in all product categories. Re-evaluation of the package, he observed, must be made literally on a day-to-day basis, rather than year-to-year or even month-to-month. "Copycatism," development of new packaging materials, new processing method, or new promotion all work to legislate against packaging "security," he said, concluding that constant vigilance is absolutely necessary to overcome the unchecked spread of "unplanned obsolescence."★

Aerosol Paint Survey

(*From Page* 86)

The survey report concludes that "more selling effort is needed. The chief advantage of aerosol paints (and big selling point) is ease of application. *More* people don't know this fact than do. The leading objection by non-users—too expensive—in the probable absence of facts or true knowledge of costs, could be more of a state of mind than a valid reason.

"Greater use of television would seem to be worthwhile in demonstrating the use and advantages of aerosol paints. After all, about half of the families in the country had used a brush or roller within the six months previous to the survey. *More consumer education is needed.* Most dissatisfaction is caused by improper application and misuse of the can itself."★

The Filler Speaks

(*From Page* 81)

and that after this initial mushroom growth, a basic and healthy industry will emerge.

Q. *Is it possible to successfully introduce a new product into an established aerosol category, where there is an established leader (Manufacturer) in the field?*

A. Most assuredly.

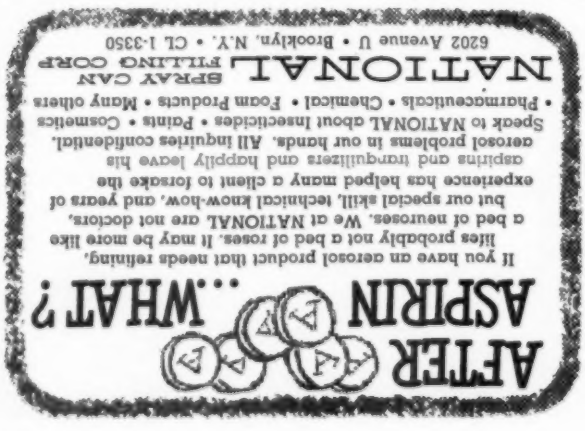
Q. *Do you feel that any of the leading product types (hair sprays, shave creams, paints, insecticides, room deodorants), have yet hit a saturation level as far as future market growth is concerned?*

A. I wouldn't say saturation, by any means. Rather, I would say that the surveys indicate that the products you mentioned, with the exception of paints, have made a very deep market penetration. Although there is an almost universal awareness of the common aerosol products, I feel that there is still an unsold segment of the consuming public and a much broader market ahead.

Q. *What is the future market potential of aerosol pigmented finishes?*

A. A recent survey by a major supplier shows rather clearly that these products have had a slow acceptance rate. Yet, the satisfaction expressed by the relatively few buyers indicates that a healthy growth lies ahead.

Q. *Sales of aerosol pharmaceutical products have risen about* 75% *in the past five years, creating an annual market of about* $25,000,000. *Do you foresee a continuing "sharp"*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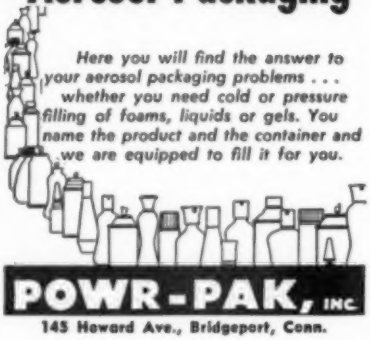

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increase in sales in this product category?

A. I would say the term "sharp" overstates the probable growth projection. Highly personal products, such as pharmaceuticals and biologicals, cannot be merchandised through mass media. Many months of research, approvals by recognized organizations, and detail through ethical channels, are required. The ease of application, ready accessibility, sterile storage conditions, et al, are reasons why these products will eventually become commonplace.

Q. *In your opinion, will multicolor paints have any significant effect on future aerosol paint market growth?*

A. No.

Q. *Does your company have any plans to increase production of Spray-on valves to the point where they might become generally available for other product types?*

A. Yes.

Q. *Do you see any definite price developing for aerosol paints? Is there a chance that improved production speeds and such factors as increased competition might drive the price down?*

A. This is extremely doubtful, barring any significant change in component prices. The direct labor factor in any aerosol product is relatively slight. As a consequence, improvement in production techniques cannot have more than an insignificant bearing, at least at the manufacturers level.

Q. *Despite the fact that most major conventional paint marketers have introduced aerosol paint lines, they employ custom fillers. How do you account for this basic difference from the cosmetic field where the trend has been toward installation of captive filling lines?*

A. The main reason is that paint is messy, tricky, and fraught with imponderables. The savings that might be realized in a "do-it-your-

self" operation are *not* commensurate with the headaches involved. Cosmetic marketers have a relatively simple situation in using a captive filling line. Here, a very efficient high-speed operation is usually built around one product, or a group of related products, requiring the same valve, container, carton, etc. On the other hand, the paint loader not only faces a smaller potential market but has to be extremely versatile because of frequent changes in color, type of product, label, special packaging, etc. The likelihood of a hair lacquer, for example, exhibiting any abnormal characteristics is remote. A batch of red enamel, on the other hand, can go completely flat and is an utter loss. This type of misfortune, together with valve problems, leaky cans, product liability, lack of trained personnel, etc., all tend to discourage the major paint marketer.

We are in an age of specialization and "each to his own" seems the rule. ★

Air Fresheners

(*From Page* 61)

itizer-Deodorizer-Disinfectant." The quaternary compounds may either be supplemented or replaced with equally powerful bactericides, such as o-phenylphenol and hexachloraphene. Metazene is the preferred material included to achieve the necessary deodorizing action. Perfumes are generally used in small amounts in order to moderate the "caustic" scent of the disinfectant compounds.

These multi-purpose products are now finding use in daily maintenance and janitorial operations where a heavy-duty action is required. Since the bactericidal activity of the various active materials is affected by metals and trace amounts of certain organic groups, thorough testing in the finished form is a marketing prerequisite. All products which carry disinfecting claims and which are sold in interstate commerce must first be registered with the U.S.D.A., under the Federal Insecticide, Fungicide, and Rodenticide Act.

The formulations in the table below are proposed for industrial products of this type.

Tests conducted with variations of formula XLVI have shown that increasing the Metazene content beyond 1.60% has almost no effect in improving the deodorizing activity. The ingredient ASC-4 Brand of Diaphene is a very new and extremely effective antiseptic agent composed of a synergistic mixture of 4',5-dibromosalicylanilide and 3,4',5-tribromosalicylanilide. It is found to inhibit the growth of a wide range of microorganisms at concentrations of 0.5 to 10 ppm.[119] None of these compositions present any problem of manufacture or storage stability, although o-phenylphenol may cause slight detinning after extended storage periods. Weight losses are normal; in the 0.1 Av.oz. per year range.

Air Fresheners of the Future

As formulation refinements continue to be made, it is reasonable to assume that air fresheners will soon be capable of the combined operations of chemical deodorization, bacterial reduction, and refreshing reodorization. Used on surfaces, they will counteract viruses, bacteria, molds, fungus and mildew growth,

INGREDIENTS	*XLIV*	*XLV*	*XLVI*	*XLVII*
Triethylene Glycol, USP	7.50			4.00
Quaternary Ammonium Salt	0.15			
O-Phenylphenol	0.03	0.50	0.10	0
ASC-4 Brand of Diaphene,[118]				0.05
Metazene (99%)		0.50	1.60	
Perfume	0.10	0.05	0.40	0.15
Ethanol (Anhydrous)	22.22	28.95	27.90	25.80
Propellant-11	35.00	42.00	40.00	42.00
Propellant-12	35.00	28.00	23.00	22.00
Iso-butane			7.00	6.00

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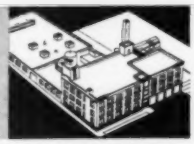

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which will forestall the generation of new odors into the air. Along with gel-type and wick-type deodorizers, the aerosol version may be automatically connected to circulating blowers of heating or conditioning units, in order to provide a healthy, clean-smelling atmosphere in the home on a more permanent basis.

Ultimately, with the advent of closed-cycle air regenerative systems which will use thermophilic algae, chlorella or other biological exchange mechanisms, under conditions of limited-spectrum light and forced circulation of the bed—or with the advent of ozonizing-deozonizing stripping systems—it may be possible to eliminate the aerosol approach to odor control in all but a few emergency situations. However, in this far future setting, it may become chic to choose various fragrances for different areas in the home, just as we select color schemes and furniture types today. Although the air freshener may change to suit conditions, it seems destined to be with us for many years to come.

Summary

The air freshener may validily be classed as one of our most important aerosol products. Although it was one of the first pressurized formulations to be developed, the potential market is so large that it continues to have an excellent growth record, with everything pointing to further expansion during the next few years.

Under the general heading of air fresheners, a wide selection of chemical deodorants, physiological reodorants, bactericidal formulations, and various combinations of these basic types have been used to combat offensive odors and restore healthy atmospheric conditions. The multiplicity of requirements that must be satisfied in order to arrive at a commercially acceptable air freshener package have been shown to demand the creative talents of perfumer, formulator and merchandiser in the fullest degree.★

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Topical Pharmaceuticals

(*From Page* 68)

tant was added to the formulation of several of the aerosol ointments.

4. It was found that concentrations of about 90% PEG 400 and 10% PEG 4000 produced a base which could be dispensed easily as a compressed gas aerosol. Forty per cent liquid petrolatum and 60% petrolatum produced a product which could also be dispensed as a compressed gas aerosol.

5. The incorporation of a surfactant into the liquefied gas aerosols improved the compatibility of the product, making it useful as an aerosol product.

6. It is believed that ointment type products can be successfully dispensed by either a compressed gas or a liquefied gas. Further work is currently being carried out in order to determine some of the other factors involved in the formulation of aerosol products for topical administration.★

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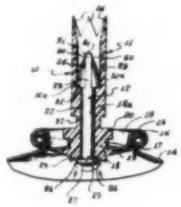
New Aerosol Patents

Listed below is a brief review of recent patents pertinent to the aerosol and related industries.

Complete copies of these patents may be obtained by writing to the Commissioner of Patents, U. S. Patent Office, Washington 25, D. C., and remitting 25 cents for each copy desired.

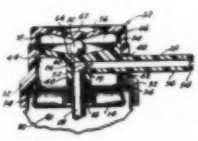
2,954,903. DISPENSER VALVE FOR PRESSURIZED CONTAINERS. Issued Oct. 4 to Leonard M. Collins, Los Angeles, Calif., assignor to Pressure Dispensers, Inc., Los Angeles.



A valve for dispensing pressurized fluids comprising: a flexible, normally straight tubular nozzle; a valve seat formed in an upstream end of said nozzle; an internal abutment in said nozzle disposed downstream of said seat and facing downstream; a poppet having a head formed with a protruding edge normally seated against said seat intermediate of the extremities thereof to close said nozzle and a relatively rigid stem received in the bore of said nozzle whereby flexure of said nozzle moves said edge off said seat to open said nozzle; and a resilient prong formed on said stem at a point therein downstream from said head and engaged with said abutment in a flexed condition whereby to resiliently urge said edge against said seat as aforesaid, said prong being sufficiently resilient to further flex and permit said head to move off said seat upon flexure of said nozzle as aforesaid.

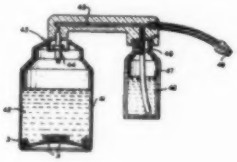
•

2,954,904. GAS PRESSURE TYPE DISPENSING CONTAINER CAP. Issued Oct. 4 to Joseph B. Potoczky, 8975 Burke Ave., South Gate, Calif.



A device for actuating a valve, operable in response to the application of a predetermined force on said valve, said device comprising: a member, said member being spaced from said valve and movable toward said valve upon the application of pressure on said member; and means interposable between said valve and said member only in a predetermined attitude of the device, whereby when said device is arranged in such attitude, pressure applied to said member is transmitted via said means to said valve, thereby to actuate the valve.

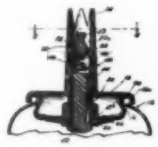
2,954,678. METHOD OF DISPERSING MATERIALS. Issued Oct. 4 to Thomas J. Mahon, Englewood, N. J., and Albert L. Edelstein and Joseph Glickstein, New York, assignors, by mesne assignments, to Association for Physiologic Research, Inc., New York.



Apparatus for dispersing, spraying, atomizing and nebulizing a liquid medium by the action of a gas evolved from an organic liquid, self-pressurizing propellant, comprising a closed, propellant container, a body of said liquid organic self-pressurizing propellant within the propellant container and partially filling the container providing an evolved gas space over the propellant liquid, a valve mounted atop the container effective upon actuation thereof to open the valve to communicate the gas space with the outside of the container, whereby upon actuation of the valve to open it, gas is evolved from the liquid propellant and issues through the valve, and a plurality of sealed individual packages disposed in said body of liquid propellant and having heat permeable wrappings and containing methyl myristate, whereby there is provided a liquid substance adapted to solidify with the evolution of heat upon cooling thereof by said propellant and resulting from vaporization and gasification of propellant, in order to maintain the temperature of the liquid propellant at a predetermined level during delivery of propellant from the container.

•

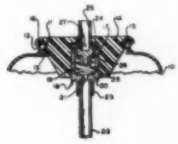
2,957,610. DISPENSING APPARATUS. Issued Oct. 25 to David Daniel Michel, 39 S. LaSalle St., Chicago.



A dispensing apparatus for use with a container having a base and an oppositely disposed open end, said apparatus comprising an apertured mounting cup, peripheral portions of which are adapted to sealingly engage the container adjacent the open end thereof, an elongate apertured resilient adjutage sealingly disposed within the aperture of said mounting cup and having a valve seat portion and an integral shoulder spaced from said valve seat portion and disposed within the aperture of said adjutage, a plug member having an elongate body portion disposed within the aperture of said adjutage to define a passageway therethrough and having a transversely extending head portion adapted to sealingly engage said valve seat portion, and a sinuous resilient tensioning member integral with the body portion of said plug member, said tensioning member having a formation thereon in latching engagement with said shoulder in the aperture of said adjutage and being effective to urge said plug member in a direction toward sealing engagement of the head portion thereof with the valve seat portion of said adjutage.

•

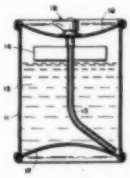
2,957,611. CONTAINER AND VALVE ASSEMBLY. Issued Oct. 25 to Philip H. Sagarin, Bridgeport, Conn., assignor to Valve Corp. of America, Inc., Bridgeport.



The combination of a resilient mounting having a pocket therein, a valve assembly in said pocket and comprising a cylindrical housing and valve gasket in tight engagement by frictional retention of the said housing in place in said pocket, said mounting and housing being substantially coextensive in an axial direction.

•

2,954,935. MEANS FOR PRESSURIZING A CONTAINER. Issued Oct. 4 to Carl Louis Stearns, Blauvelt, and Lloyd Frank Hansen, New City, N. Y., assignors to American Cyanamid Co., New York.



Means for pressurizing a container comprising: a container body and, inside the container body, a porous desiccant power cake impregnated with a readily liquefiable volatile propellant which is normally gaseous at room temperature and pressure.

•

2,957,838. HAIR SPRAY COMPOSITION CONTAINING LOWER ALKYL HALF ESTER OF AN ETHYLENE MALEIC ANHYDRIDE COPOLYMER, ALCOHOL AND PROPELLANT, AND PROCESS FOR MAKING. Issued Oct. 25 to Charles L. Mills Jr., Longmeadow, Mass., assignor to Monsanto Chemical Co., St. Louis.

A composition adapted for use as a hair spray comprising (*a*) about 0.5-5.0 weight per cent of a copolymer of maleic anhydride and an olefin containing 2-4 carbon atoms, said copolymer having a molecular weight of about 25,000-70,000 and being esterified to the extent of 50-70% with a saturated aliphatic alcohol containing from 1-4 carbon atoms, dissolved in (*b*) about 25-50 weight per cent of a solvent consisting of anhydrous saturated aliphatic alcohols containing 1-4 carbon atoms and (*c*) about 49-74% of a propellant consist-

ing of halogenated alkanes containing 1-5 carbon atoms and being capable of exerting a total pressure of 25-50 p.s.i. at room temperature.

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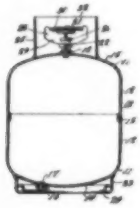
2,956,708. DISPENSING CONTAINER FOR REFRIGERANTS. Issued Oct. 18 to Simon Richard Nusbaum, Wynnewood, Pa., assignor to Pennco Engineering Co., Philadelphia.



In a dispensing container for pressurized dispensing refrigerant in liquid form, a fluid tight container having opposite ends, at least one of said ends having a longitudinally axially disposed extension therefrom of lesser diameter than the container for supporting said container with said one end downwardly disposed for liquid refrigerant dispensing, said extension having a side access opening therein, and a dispensing valve disposed within said extension and mounted on said one of said ends, said dispensing valve having a discharge connection extending sidewise with respect to the longitudinal axis of the extension and towards said access opening, said valve having an operating handle spaced inwardly from the outer marginal edge of the extension, said extension being of a length with respect to the length of said valve to permit manual access to said valve handle through said access opening with said container supported by said extension and with said valve handle downwardly disposed.

•

2,955,983. LIQUID ANTIPERSPIRANT COMPOSITION. Issued Oct. 11 to Ralph Paul Messina, Hackensack, N. J., assignor to Colgate-Palmolive Co., New York.

An antiperspirant liquid composition particularly suitable for use as an antiperspirant spray comprising aluminum chlorhydrate, perfume, a water-soluble surface-active agent and an organopolysiloxane in an aqueous medium, said organopolysiloxane being in an amount sufficient to modify the spray characteristics.

•

Beckman Instruments Names 4

Beckman Instruments, Inc., Fullerton, Calif., manufacturers of gas chromatographs, pycnometers, and other aerosol laboratory analysis equipment, last month named Michael K. Lenihan, Harold J. Peper, Robert B. Sankey, and Donn Thomson as sales engineers in its Eastern Region.

Messrs. Lenihan and Peper will work out of the firm's Mountainside, N. J. office, Mr. Stankey from the Boston office, and Mr. Thomson from the Philadelphia office.

Trade Mark Applications

Applications for registration of the following trademarks were published in recent issues of the *Official Gazette* of the U. S. Patent Office. In not all cases are there strictly aerosol trademarks, however, many of the products listed below come within the category of those for which a possible future use in aerosols is foreseen.

SAFE-SEE, for windshield and window glass cleaner. Filed Dec. 10, 1959, by George H. Fullerton, d.b.a. Fulco, Smyrna, Ga., reporting first use June 8 of same year.

METHOLAIRE, for inhalers. Filed June 16 by Hankscraft Co., Reedsburg, Wis., claiming first use April 4.

INHAL'A'JET, for medical applicances —namely, a kit or combination package comprising an atomizer and an asthma relief fluid for use therein. Filed June 23 by Asthmanetrin Co., Portland, Ore., giving first use as March 26.

ATHA-SPRAY, for medicinal preparation to treat and prevent athlete's foot. Filed June 10 by Youngs Rubber Corp., New York, with first use reported as May 26, 1960.

MEDI-QUIK, for preparation for the treatment of minor cuts, scrapes, scratches, burns, sunburn, skin rashes, insect bites and poison ivy. Filed May 25 by Lehn & Fink Products Corp., Bloomfield, N. J., with first use reported as May 18.

SAY-AH, for cough syrup, an inhalant in vapor form, by aerosol spray or steam, used to introduce medicaments in the air of a room, and nasal spray. Filed April 1 by Chesebrough-Pond's, Inc., New York, reporting first use Feb. 25.

PROXOL, for inhalant, namely, a steroid. Filed Nov. 16, 1959, by the Upjohn Co., Kalamazoo, Mich., with first use given as July 17, 1959.

EYES RIGHT, for chemical composition with built-in residual action that prevents fogging and acts as a cleaner for glass and plastic. Filed April 20 by International Latex Corp., Dover, Del., giving first use March 26.

RAVE, for fruit-flavored beverage concontrate for making soft drinks. Filed March 7 by Cramore Products, Inc., Point Pleasant Beach, N. J., giving first use Feb. 23.

FANTASTIK, for spot remover. Filed Oct. 28, 1959, by Jay D. Silberman, d.b.a. White Frost Chemicals, Greenwich, Conn., giving first use Jan. 15 of same year.

NEO-DILODERM, for medicinal preparation indicated for topical management of allergic and inflammatory dermatoses. Filed Sept. 25, 1959, by Schering Corp., Bloomfield, N. J., claiming first use July 13, 1959.

X-ALL, for herbicides. Filed Dec. 7, 1959, by Amchem Products, Inc., Ambler, Pa., reporting first use Nov. 20, 1959.

'LASTICOLOR, for vinyl spray used for refurbishing and proving a protective coating on materials including fabrics, leatherette, synthetics, rugs, upholstery and genuine leather, and reducers and retarders therefor. Filed Nov. 4, 1959, by Taussig Paint Sales Co., Jenkintown, Pa., indicating first use May 20 of same year.

GARRY'S MELT, for liquid preparation applied in spray form for melting ice and snow on windshields, door locks, and other weather-exposed parts. Filed Dec. 7, 1959 by Garry Laboratories, Inc., Buffalo, N. Y., with first use given as one or about Nov. 9, 1959.

DUET, for air sanitizer and deodorizer. Filed Sept. 28, 1959 by Madison Chemical Corp., Maywood, Ill., claiming first use Jan. 1958.

MELT-O-MATIC, for ice and snow melting composition. Filed Sept. 28, 1959 by Madison Chemical Corp., Maywood, Ill., giving first use in July 1958.

DEMO, for topical skin application, specifically for demodectimange in dogs. Filed Jan. 13 by Will T. Dunn, d.b.a. Old Line Drug Co., Greenville, S. C., reporting first use Nov. 1, 1959.

PURITAN CHEMICALS, for household deodorants, insecticides, weed killers, germicides, and other cleaning, sanitation, and maintenance products. Filed Feb. 23 by Puritan Chemical Co., Atlanta, giving first use as March 1959.

P-2-XX, S-224, and 333, all three for agents for protection against moth and mildew damage to fabrics. Filed Feb. 29, by Baxter Laboratories, Inc., d.b.a. Wallerstein Co., Morton Grove, Ill., claiming first use Jan. 11.

BIOFERM, for preparations for use in the treatment of insects—namely, microbial insecticides. Filed May 1, 1959, by Bioferm Corp., Wasco, Calif., claiming first use Dec. 26, 1958.

LUMISCREEN, for fluorescent pigment colors. Filed July 22, 1959, by Hercules Powder Co., Wilmington, assignee of Imperial Color, Chemical & Paper Corp., Glens Falls, N. Y., with first use given as July 2, 1959.

FRIENDSHIP GARDEN, for spray cologne, toilet water and other cosmetics. Filed March 16 by Shulton, Inc., Clifton, N. J., giving first use as Aug. 1, 1957.

SKIL, for hair spray. Filed Aug. 13, 1959, by George H. Weyer, Inc., Kansas City, Mo., giving first use as August 1954.

NODOR, for toilet preparation to be applied to the feet to relieve sore and burning feet, and to stop foot odors. Filed Aug. 6, 1959, by Nodor Co., d.b.a. Nodor Corp., Minneapolis, reporting first use April 1, 1959.

DEKA, for whipped cream, cream and cream cheese spread. Filed Feb. 2 by N. V. Fabriek van Melkproducten "de Nieuwe Beemster," De Rijp, Netherlands, claiming priority on Dutch registration dated July 22, 1959.

MIST-O-GARLIC, for garlic flavoring oil. Filed Oct. 16, 1959, by Morris Specialties, Inc., West New York, N. J., reporting first use Aug. 11, 1959.

CLASSIFIED ADVERTISING

Address all classified replies to Box Number c/o *Aerosol Age*, PO Box 31, Caldwell, N. J. Rates for "Help Wanted" advertisements are 20¢ per word; minimum charge $3.00. Rate for individuals seeking employment is 5¢ per word, $1.00 minimum. Advertisements of new machinery, products and services accepted at the rate of $10.00 per column inch. Minimum space, one inch. Copy closing date, 10th of preceding month. *Checks must accompany all orders.*

HELP WANTED:

OUTSTANDING OPPORTUNITY — Wonderful opportunity with excellent earnings and tremendous future. We need the top aerosol chemist, an outstanding plant manager and 4 salesmen. Only qualified men will be interviewed. Those selected must take complete charge and responsibility for their respective departments. A well established firm is opening the most modern aerosol plant in the industry, in Houston, Texas. Houston offers beautiful country clubs, wonderful fishing, boating, hunting, etc. 40 minutes to the beaches on the beautiful gulf coast. Mail complete resume to: A. J. Scholes, P. O. Box 6565, Houston, Texas.

SITUATION WANTED:

Industrial Engineer with experience in all phases of contract filling. Methods and cost reduction on filling operations. Product estimating, quality control, and management negotiation. Write Box No. 232, Aerosol Age.

PHARMACEUTICAL CHEMIST — B. S. degree, age 42, 17 years of broad, diversified experience in the research and development of pharmaceuticals and aerosols. Capable of taking a product idea from its inception to the marketing level. Would be interested in development, production or technical sales. Desire to relocate in southern or far western U.S.A. or Latin America. Address Box 233, c/o Aerosol Age.

MISCELLANEOUS:

Export Firm needs aerosol enamels, lacquers, multicolors, detergents, insecticides, agricultural & garden specialties, waxes, and all types of aerosol specialties and products. Write P. O. Box 11, Woolsey Station, Long Island City 5, N. Y.

WANTED: Territories open for a new one quart refillable pressured container. Many uses, use bulk materials. One filling pays for unit in savings. Retails—$4.95. Address P. O. Box 187, Spring Lake, N. J.

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90,000 American 202 x 214 Cans
60,000 Precision Valves
12,000 Precision #4B Spouts
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65,000 Precision #5 Domes
40,000 Precision #4 Cover Caps

CONTACT:
LEON GOODHART
MULTIPLE PRODUCTS CORP.
1260 Zerega Ave.
New York 62, New York
TAlmadge 4-2100

House of Harley Moves

The executive offices, art department, sales, advertising, and production department of The House of Harley, Inc., have moved to new quarters at 10 East 40th Street, New York 16, N. Y. The company designs and manufactures labels and decorative boxes for the aerosol and cosmetic industries. The House of Harley Printing Co. will continue to operate from its downtown plant at 34 Hubert Street, New York 13.

•

Colton Names Sales Agency

Edward A. Wagner & Associates has been appointed to handle the complete Arthur Colton line of pharmaceutical and chemical industry machinery and tabletting and filling equipment.

The Wagner firm, which is located at 3911 Oak Lawn, Dallas 19, Texas, will handle sales of Colton machinery in Texas, Oklahoma, Louisiana and Arkansas.

•

Dept. Store Directory Ready

The latest issue of Directory of Department Stores has been announced by the Department Store Guide, 2 Park Ave., New York 16. It lists department stores, chains, resident buyers, branch buying offices; together with the names of all key executives, merchandise managers and buyers. The volume costs $50.

Mulford Named by O-I

The election of Ray H. Mulford as an executive vice president has been announced by Owens-Illinois Glass Co., Toledo, O. He will continue as president of the company's Glass Container Division, a position in which he has management responsibility for the Glass Container Division-East, the Pacific Coast Division, and the Closure and Plastics Division.

Mr. Mulford, a vice president of Owens-Illinois since 1949, joined the company in 1933. He spent 12 years in the Pacific Coast Division, serving successively as supervisor of manufacturing control, manager of the Los Angeles plant, manager of the Oakland plant and general factories manager of the division. He came to O-I's general offices in Toledo in 1949 as vice-president and director of personnel administration. He was named general manager of Kimble Glass Company, an O-I subsidiary, in 1953 and was president of Kimble when named to his present position in August.

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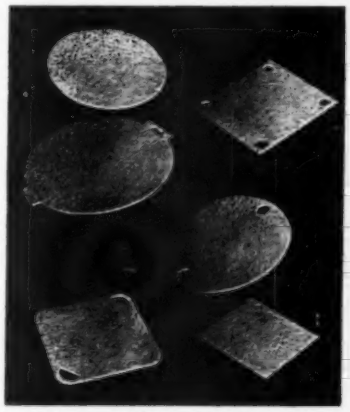

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Index to Advertisers ▸▸ December 1960

—A—

Action Plastics, Inc. 107
Aerosol Corp. of the South 128
Aerosol Machinery Corp. 118
Aerosol Research Co. 3
Aerosol Techniques, Inc. 101, 125
Alfco, Inc. 87
Allied Chemical Corp., General Chemical Division 76, 77
Alpine Aromatics, Inc. 111
American Can Co. 72, 73
American Cholesterol Products, Inc. ..... Nov.
Anchor Plastics Co., Inc. 119
Arctic Lodges, Ltd. 130
Armstrong Laboratories 126
Aromatic Products, Inc. 122
Associated Brands, Inc. 125

—B—

Baltic Chemical Co. ..... Oct.
Barr, G., & Co. 92, 127
Bridgeport Metal Goods, Inc. 4
Builder's Sheet Metal Works, Inc. 117
Buschmann Products, Inc. 118

—C—

Chase Products 29, 128
Clayton Corp. 99
Cleveland Aerosol Pkg. Corp. 128
Consolidated Aerosol Corp. 125
Cons. Pkg. & Mach. Corp. 116
Continental Can Co. 23
Continental Filling Corp. 89, 128
Corkens, Inc. 75
Cowles Chemical Co. 24
Croda, Inc. 25
Crown Cork & Seal Co. 60

—D—

Dow Corning Corp. 17
Druk-Pak, Inc. 120
du Pont de Nemours Co., E. I. 12

—E—

Eastern Cap & Closure Co. ..... Oct.
Emson Research, Inc. 22
Eska Chemical Corp. 126
Eveready Products, Inc. 127

—F—

Fairfield Chemical Division, Food Mach. & Chem. Corp. ..... 4th Cover
Farbwerke Hoechst 71
Felton Chemical Co. 106
Florasynth Laboratories, Inc. 114
Fluid Chemical Co. 95, 125
Walter Frank Organization 102
Fritzsche Bros., Inc. 9

—G—

Gard Industries, Inc. 128
Geigy Agricultural Chemicals, Div. Geigy Chemical Corp. 27
Gen. Aniline & Film Corp. 31
Givaudan-Delawanna, Inc. 65
Gottscho, Adolph, Inc. ..... Nov.
Grestco Dyes & Chemicals Co. 125

—I, J—

IKI Manufacturing Co. 128
Impact Container Corp. 83
Island Equipment Corp. 122
JG Machine Works 9

—K, L—

Karl Keifer Co. 34
Kaysing Korp. 127
Kiwi Coders Corp. 113
KLM-Royal Dutch Airlines 134
LeMay Machine Co. 108

—M—

Magnus, Mabee & Reynard, Inc. 80
Marcy Laboratories, Inc. 128
Master Tank & Welding Co. ..... Nov.
McLaughlin-Gormley-King Co. 79
Metal Fabrications, Inc. 8
Mettler Instrument Co. 120
Mohawk Furniture Finishing Products, Inc. ..... Nov.

—N—

National Chem. & Plastics Co. ..... Oct.
National Spray Can Filling Corp. 124
Newman-Green, Inc. 15
Norda 103

—O, P—

Ohio Rubber Co. Division, Eagle-Picher Co. 62
Oil Equipment Laboratories, Inc. ..... Oct.
Old Empire, Inc. 115, 125
Owens-Illinois Glass Co. 56, 57
Pace, Inc. 104, 125
Par Industries, Inc. 123, 126
Peerless Tube Co. 91
S. B. Penick & Co. 33
Pennsalt Chemicals Corp. 32
Penn Cork & Closures, Inc. 112
Peterson Filling & Packaging Co. ..... 3rd Cover, 127
Pfizer, Chas. & Co. 21
PFW 13
Pharma Plastics, Inc. 122
Powr-Pak, Inc. 126
Precision Valve Corp. 10, 11
Prentiss Drug & Chemical Co. 16
Pressure Pak, Inc. 114
Prepo Corp. ..... Nov.
Puritan Aerosol Corp. 126

—R—

Richford Corp. 105
Risdon Mfg. Co. ..... Nov.
Roubechez, Inc. 19
Roure-Dupont, Inc. 128

—S—

Schimmel & Co. 58
A. Schrader's Son Division Scoville Manufacturing Co. 18
Seaquist Manufacturing Co. ..... cO
Sprayon Products, Inc. 129
Stalfort Pressure-Pak 2nd Cover, 125
Sun-Lac, Inc. 125
Super Whip Valve Co. 121

—T, U, V—

Thomasson of Pa., Inc. 126
Tube Manifold Corp. 110
Union Carbide Chemicals Div. National Distillers & Chem. Corp. 20
Valve Corp. of America 26
van Ameringen-Haebler, Div. International Flavors & Fragrances 69

—W—

West Penn Mfg. & Supply Corp. 84
Western Filling Corp. 126
S. S. White Dental Mfg. Co. ..... Nov.
Wheaton Plasti-Cote Co. 67

OVER THE TRANSOM

AS WILL be seen from the story on page 36, the Canadian aerosol industry is somewhat disturbed that the market hasn't yet met its expected sales level. The major shortcoming, in the view of most of the people at the CMCS meeting in Montreal, is the lack of consumer education about what an aerosol is and what are its advantages. The CMCS would do well to take a large hint from the publicity efforts of the CSMA's Aerosol Division, which have produced readily discernible effects on this side of the border. One logical approach might be full participation in the CSMA Aerosol Publicity Program, so as to obtain the benefits of CSMA publicity in Canadian as well as American magazines and newspapers.

* * *

Bob Allen (of Wheaton Plasti-Kote) brought his charming wife to the CMCS Convention in the hope of showing her some of the many sights of Montreal. Lo and behold, the first night there she came down with an appendicitis attack, had to have an operation, and spent a whole week in the hospital. The only consolation was that her operation was performed at the Royal Victoria Hospital, famed as one of the best in the world for skill of its surgeons, beauty of nurses, and general treatment of patients.

A doctor was also indirectly responsible for the absence of Crown Can's Seth Schneible (one of the scheduled speakers) at the CMCS meeting. It seems that the stork arrived at Seth's house (for the fourth time) just prior to his departure. S. V. Tuttas, his boss, performed notably well as substitute speaker.

* * *

An example of how important aerosol newsletters are becoming is recent word from Great Britain that Durazone (Sales) Ltd., London, has distributed a cool 65,000 copies of "Aerosol World," its newsletter. Most went to retailers and distributors in the British Isles.

* * *

Starch isn't the only "new" product that is currently stirring up new interest in the aerosol industry. Aerosol ice removers (for windshields and other glass surfaces) are also moving very well. Union Carbide and Firestone Tire & Rubber Co. are just two of several major marketers pushing the product in TBA (tires, batteries, and accessories) and hardware stores, service stations, and at new car dealers.

* * *

Quite a thing is made of aerosol toothpaste in the late Clark Gable's next-to-last motion picture, "It Happened in Naples." Mr. Gable, an American businessman visiting Italy, has a pressurized toothpaste among his belongings, and it's "on camera" for quite a few minutes. At one point Sophia Loren, picks it up and says something about: "What will the Americans think of next!"

* * *

Time was kids at Halloween had to rely on their own devices for mischief-making. Not so any more. Now, in a good many areas of the country, aerosol products are used as weapons to spray automobiles, houses, and even people. Paints, insecticides, perfumes, and shaving creams seem to be the favorite weapons, and there were newspaper stories in the Midwest about damage to automobile paint from of all things, shaving cream!

* * *

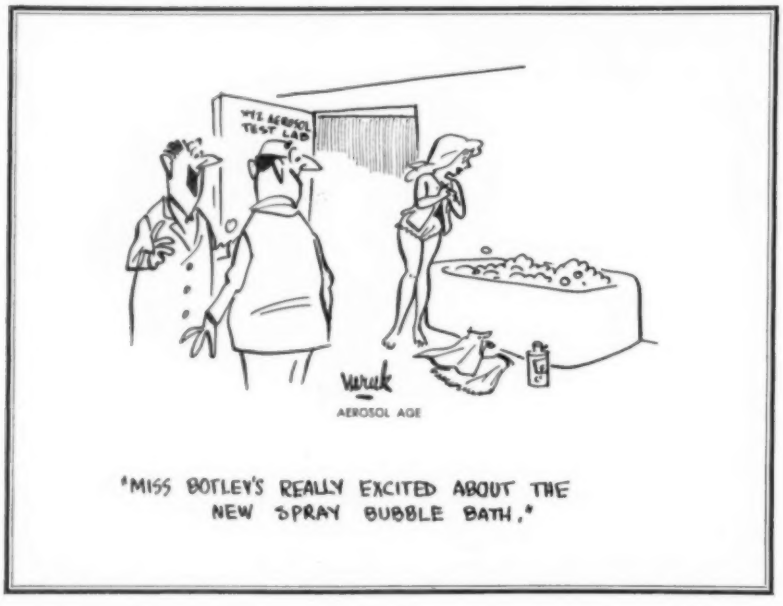
Look for a full-color, full-page advertisement on glass aerosol bottles in the Dec. 5 issue of Life. *The Glass Container Manufacturers Institute is paying the bill for the ad, which emphasizes the convenience, attractiveness, and product protection of the glass package for the consumer.*

* * *

March 6 could be an important date for marketers and packagers of aerosol food products. On that date food additive extensions terminate, and further extension is *not* permitted under the Food Additives Law. So far, the FDA has granted 3040 extensions; and indications are that the FDA's currently heavy workload will make necessary a legislated extension of the date, possibly for another year.

* * *

English humor magazines, which take occasional cracks at aerosols, have done it again. This time it was Katharine Whitehorn, who writes in the Sept. 30 issue of The London Spectator: *"Just about everything is now coming in bottles with aerosol sprays: hair sprays scented to resemble any garbage can; misty, attractive eau-de-cologne; deodorants, and a hand cream on the way. I foresee, all the same, trouble. I was so nervous before introducing my fiancé to my father (not, I found, a skill that practice improves), that I snatched up my hair lacquer and was entirely coated with it before I realized it was a particularly pungent insecticide!"*



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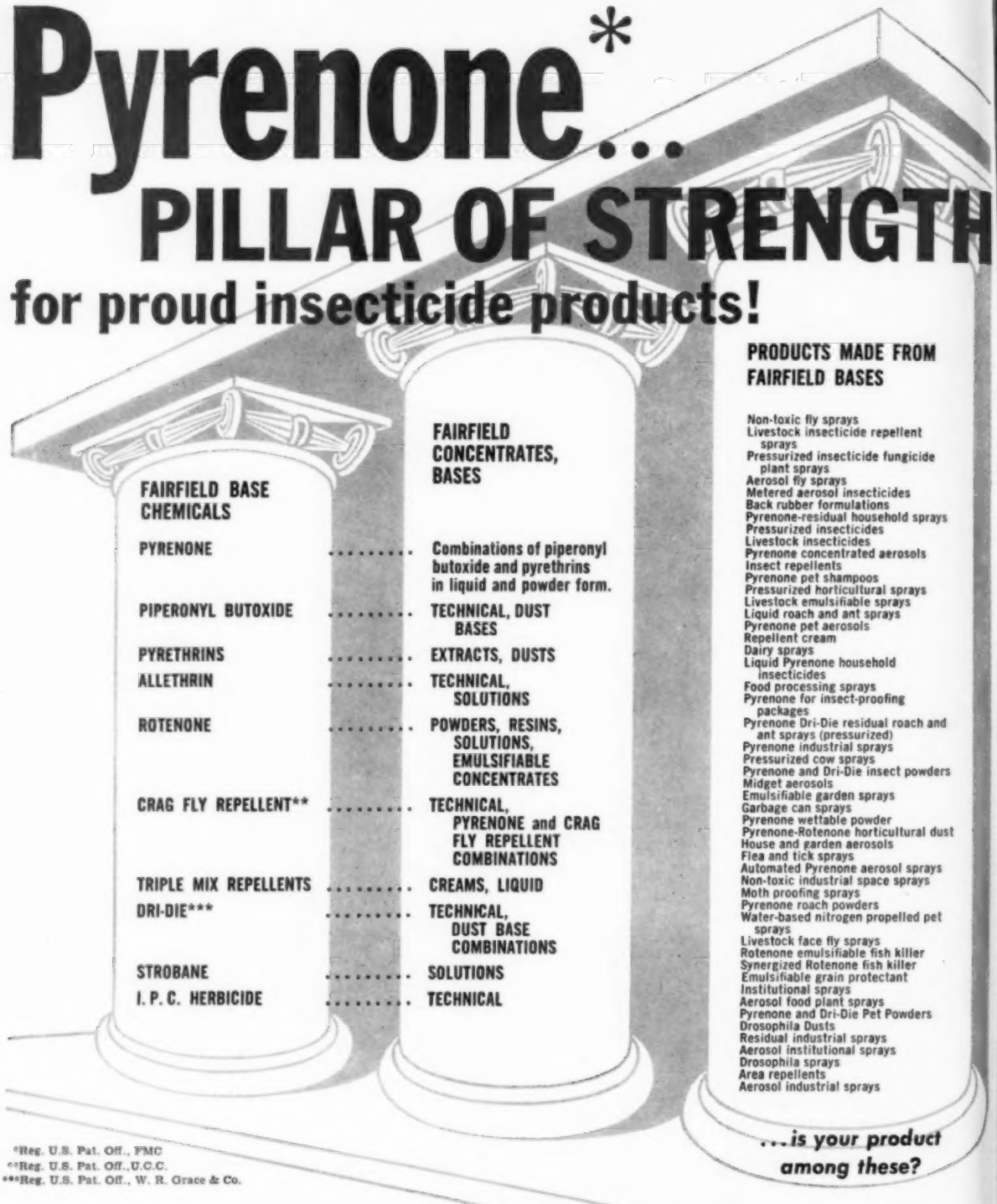

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PYRETHRINS	EXTRACTS, DUSTS
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ROTENONE	POWDERS, RESINS, SOLUTIONS, EMULSIFIABLE CONCENTRATES
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TRIPLE MIX REPELLENTS	CREAMS, LIQUID
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Pyrenone and Dri-Die insect powders
Midget aerosols
Emulsifiable garden sprays
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Pyrenone roach powders
Water-based nitrogen propelled pet sprays
Livestock face fly sprays
Rotenone emulsifiable fish killer
Synergized Rotenone fish killer
Emulsifiable grain protectant
Institutional sprays
Aerosol food plant sprays
Pyrenone and Dri-Die Pet Powders
Drosophila Dusts
Residual industrial sprays
Aerosol institutional sprays
Drosophila sprays
Area repellents
Aerosol industrial sprays

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